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THE

ELEMENTS

OF

COMMERCE;

OR,

A TREATISE

ON

DIFFERENT CALCULATIONS,—OPERATIONS OF EXCHANGE,
ARBITRATIONS OF EXCHANGE,
SPECULATIONS IN EXCHANGE AND BANKING OPERATIONS,
EXCHANGE CIRCULATIONS.

OPERATIONS OF SPECIE AND BULLION,
PARS OF EXCHANGE AND OF COINS,—PRACTICAL SPECULATIONS
IN MERCHANDIZE,
DESCRIPTION OF MONIES, WEIGHTS, AND MEASURES,
TABLES OF MONIES, WEIGHTS, AND MEASURES,
TABLES OF LOGARITHMS.

BEING

A COMPLETE SYSTEM

OF

COMMERCIAL CALCULATIONS.

BY CHRISTOPHER DUBOST,
Formerly Engineer, and Author of 'Commercial Arithmetic,' &c.

IN TWO VOLUMES.

VOL. I.

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LONGMAN, HURST, REES, AND ORME, PATERNOSTER ROW;
AND T. OSTELL, AVE MARIA LANE.

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PREFACE.

WHILE the work which I am about to ſubmit to the Public was yet in its infancy, I took occaſion to recommend it to the patronage of one of the moſt eminent merchants of this city. "Have you, then, indeed determined," ſaid he, "to write upon commerce? Our accompting-houſes are already encumbered "with books for which we have ſubſcribed, "and of which, however, we do not make any "uſe. Do you conſider, that, by adding another to the number, it may not have any "better fate than that of being conſigned, "with the *ſelf-praiſed* productions of other "authors, to duſt and to oblivion?"

"If you do not make uſe of thoſe works," replied I, "the reaſon is obvious—they are "deſtitute of merit. If you could derive any "uſe from them, their exiſtence, otherwiſe "than as lumber, might, in general, be protracted beyond the peruſal of their title-"pages. They have been written by perſons, "who, without being men of buſineſs, under-"took to reaſon upon what it was not in the "nature of things they ſhould underſtand."

“ Believe me,” replied my friend, “ the ſub-“ ject which you have undertaken is exhauſted; “ the moſt that you can effect will be to re-“ compile compilations; and I would earneſtly “ adviſe you to ſpare yourſelf the mortification “ that awaits you.”

I was proceeding to rejoin, that, having felt an utter diſguſt of the compilations upon commerce, nothing was more foreign from my purpoſe, and from my inclinations, than to tread over the beaten track of dulneſs and of impertinence, when an accident occaſioned our ſeparation.

In ſpeaking thus of the publications extant upon the practice of Commerce, I naturally excepted a few works of merit which have appeared abroad. In fact, the reverence which I cheriſh for the labours of the celebrated Kruſe, prompts me to acknowledge with ſatisfaction, that the deſcription of monies, weights, and meaſures, and their reſpective tables, which form half of the ſecond volume of The Elements of Commerce, are founded upon thoſe of the Hamburgh Kontoriſt.

The publication of the former has not originated in any ordinary combination of circumſtances: the obſtacles incident to the undertaking have ſerved, I truſt, to quicken my exertions, while the labour to embody them has neceſſarily been ſturdy. I ſhall not enlarge upon this ſubject, not only as it would not at all intereſt the public, but as it is my wiſh that the merchants, in particular, ſhould judge of the production by its intrinſic merit, abſtractedly from any other conſideration. If my book be not better than thoſe which have preceded it, I do not ſolicit protection; but if the information which it contains be in every caſe found certain; if my calculations be invariably exact; in a word, if the work may be conſulted with confidence, it will unqueſtionably be uſeful, and its utility muſt enſure its ſucceſs.

As, however, The Elements of Commerce conſtitute, under every point of view, a new production in this country, it is fit that, in the firſt inſtance, the public ſhould form their own opinion as to the ſubjects choſen, and to the manner in which they are treated; and with this view I have publiſhed this firſt volume, and opened a ſubſcription, at the ſame time, for the whole of the work. The ſecond volume will be delivered within a few months, and a liſt of ſubſcribers will be annexed to it.

I do not ſolicit encouragement as a ſtimulus to the compoſition of that volume, or as an indemnity for expences partly paſt and partly future: my labours are complete; and my object is merely that of ſubmitting ſuch parts of my work, as are printed, to thoſe of the Mercantile Community whoſe intelligence and habits will beſt enable them to anticipate the character of the remainder. The names of thoſe who may honour my labours with their patronage, in the interval between the two publications, will afford to my book a ſanction which muſt otherwiſe be the reſult of time.

London, December 16,
1805.

EXPOSITION OF THE PLAN.

FIRST CHAPTER.

THE ſcience of commercial calculations, and the knowledge of the monies, weights, and meaſures of foreign countries, are the ſubjects of which I have undertaken to treat in the courſe of this work.

With a nation whoſe greatneſs and whoſe power are inherent in its commerce, whatever may tend to elucidate the theory, or to extend the practice, of the intercourſe of profit, has a ſilent but preſcriptive claim to the attention of Government.

Upon the ſame principle it is, that whatever may tend to aid the conception, and to facilitate the execution, of the operations of merchants, whatever, in a word, may be effected by calculation to enſure ſucceſs, or to obviate loſs, cannot fail of exciting a permanent intereſt in the ſeveral mercantile claſſes of the community.

A work of the deſcription of The Elements of Commerce may not, indeed, be wanted in reſpect to the trade of England with her colonies, ſince, not any ſcience is requiſite for the importation of their produce; but the caſe muſt evidently be very different when we change the ſcene to the diſtribution of a very conſiderable part of ſuch produce to continental purchaſers. In fact, to effect that diſtribution, as well as the exportation of our manufactures, it is expedient to examine which may be the place that will afford the moſt advantageous market; and this can be effected only by preliminary calculations. In like manner, when we are about to import the raw materials, or national produce, furniſhed by the different countries with which we trade, the choice of the place whither we ſhould direct our ſpeculations is naturally the conſequence of comparative calculation.

To determine ſuch calculations, it is indiſpenſible to know in what manner the courſes of exchange are fixed, and to be able to reſolve the operations which are derived from them. It then becomes expedient to aſcertain whether the greateſt advantage may be obtained by drawing, or by remitting, either by a direct operation, or by adopting any of thoſe combinations of buſineſs which are known under the denomination of *arbitrations of exchange.*

Again: as the exchanges reſulting from the commercial relations of two countries have a neceſſary tendency to balance each other, it is important to know the operations relative to the importation and exportation of bullion and ſpecie; ſuch operations being abſolutely ſupplementary to commerce in merchandize. The calculations to which I have referred, require, however, a knowledge of the monies, weights, and meaſures of the ſeveral commercial nations, incluſively of their reſpective diviſions and relations. Indeed, it may be ſaid with truth, that the poſſeſſion of ſuch knowledge, and the means of reducing it to practice, are mutually dependant.

The wiſdom of the Britiſh Government, its conſtant attention to the commercial intereſts of the country, and the celebrated Navigation Act, have exalted Great Britain to the dominion of the ſeas. Her Maritime

Power and commercial conſequence being thus in the reciprocal relation of cauſe and effect, every thought and every effort ſhould be directed to the preſervation of the one no leſs than to that of the other.

Towards the cloſe of the year 1804, I publiſhed The Merchant's Aſſiſtant: the ſale of the whole of the edition has evinced the approbation beſtowed upon that eſſay by the public, and juſtified the following opinion, as expreſſed in The Critical Review for February, 1805.

"Upon the whole, after the expenſive and futile *ſubſcription* publications of M. Monteſiore*, we do not heſitate to ſay that this little volume, which contains the complete ſcience of a merchant, is the cheapeſt, moſt ſimple, conciſe, and uſeful aſſiſtant to the buſineſs of the counting-houſe, that has yet been preſented to the public."

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* The Editor alludes, no doubt, to The Commercial Dictionary, a publication which, as we are told by its author, was honoured by a diſtinguiſhed, and perhaps unprecedented, patronage.

Referring to *coins*, we find the following claſſification of the monies of Spain:

MADRID, CADIZ, SEVILLE, and NEWPLATE.

GIBRALTAR, MALAGA, DENIA, and VELON.

BARCELONA, SARAGOSSA, VALENCIA, and OLDPLATE.

When abſurdities ſuch as thoſe juſt noticed are of frequent occurrence in The Commercial Dictionary; when errors of the preſs are detected at every ſtep; when it is found that articles of the greateſt importance are either omitted, or negligently treated; and that the ſubjects contained in the courſe of this volume are reſtricted to four pages; we cannot but conclude that the opinion of the Editor of The Critical Review, of which Mr. M. has conſidered himſelf aggrieved, and which he has repreſented as libellous, is, in fact, rather indulgent than otherwiſe.

It is far from being my intention to attempt to juſtify thoſe imperfections which have crept into the work in queſtion; but I could wiſh that it were conſidered, that, as I was at that time engaged in the buſineſs of an Accompting-Houſe, my attention was neceſſarily divided; and, I may add, that the principal object of The Merchant's Aſſiſtant was that of ſounding the public opinion.

While compoſing The Elements of Commerce, my ideas have been conſtantly directed to one object, which is that of being uſeful; and, if I ſhould not be found entitled to a degree of praiſe, I do not heſitate to expoſe myſelf to plenitude of cenſure, by acknowledging that the work, ſuch as it may be, is commenſurate with the extent of my powers. The public will determine as to the reſult: its deciſion will be without appeal, and leave, if unfavourable, my cauſe defenceleſs.

In conceiving the plan of The Elements of Commerce, I conſidered that the calculations which I was about to preſent to the public, were, in general, of a nature different from thoſe which are taught in ſchools; that young merchants, after having finiſhed their education, would not willingly revert to elementary ſtudies; and that, fraught with veneration for the profound ſcience of their preceptors, they would diſdain to learn whatever had not been included in the circle of their tuition. In fact, as we think in our childhood as others teach us to think, we naturally adopt their prejudices; and even when we arrive at an age when we preſume that we poſſeſs an independent power of exerciſing our faculties, we continue to think by the perception of others, as long as the prejudices which others have imparted retain their empire. Hence I concluded that The Elements of Commerce would be uſefully preceded by a treatiſe upon Commercial Arithmetic, intended as an eſſay to change the ſyſtem of teaching hitherto adopted in ſchools.

In order, however, to attack with propriety ideas generally received, ſtrengthened by prejudice, and conſecrated, as it were, by habit, it is neceſſary to have recourſe to the incontrovertible reaſonings which are inſeparable from truth, and which it is the firſt duty of a writer to place in a point of view the moſt ſimple, and therefore the moſt forcible*.

Our Treatiſes upon Arithmetic, upon Geometry, and upon Algebra, are almoſt always begun by axioms, definitions, and principles. In order, however, thus to accumulate theſe diſtinctions, they muſt have been previouſly eſtabliſhed; and in order to eſtabliſh them, a certain track muſt have been followed. Such track cannot be any other than that which nature has pointed out to us, of decompoſing a whole into its parts, and afterwards of recompoſing them.

At the firſt perception of a *proſpect*, I ſee every thing, but do not diſcern any part in particular. In order, then, to obtain this particular knowledge, it is neceſſary to examine each part in ſucceſſion. Beginning, therefore, with the principal objects, I obſerve them in order, and judge, by compariſon, of their relations. Having by this means acquired a knowledge of their reſpective ſituations, I obſerve in ſucceſſion all the objects which occupy the intervals, and, by comparing each with the adjacent principal object, an accurate idea is formed of their ſeveral poſitions.

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* The reader will obſerve, that I have been compelled to adopt, in the courſe of this chapter, a language which is apparently foreign from the plan of ſimplicity to which I have adhered in the work itſelf. Such language, however, will not appear miſplaced, if it be conſidered that the Commercial Arithmetic and The Elements of Commerce are grounded upon the ſame metaphyſical reaſoning which I have uſed in animadverting upon preceding works.

From this moment, at the ſame time that I diſtinguiſh all the objects whoſe form and ſituation I have perceived, the view of the whole is entire. The order, therefore, in which the component objects are repreſented in my mind is no longer ſucceſſive, but ſimultaneous. It is the ſame order in which thoſe objects themſelves exiſt; and inſtead of ſeeing them, as at firſt, in a confuſed and indeterminate manner, I perceive them, at one view, both diſtinctly and collectively. What I had decompoſed being now recompoſed, the proceſs is complete, and its purpoſe anſwered.

In like manner, if I were deſirous of obtaining an accurate perception of a machine, I ſhould decompoſe it, in order to ſtudy each of its parts by itſelf. As ſoon as I might have formed a preciſe idea of the compoſition of each, and of the relation of the one to the other, and be able to replace the ſeveral parts in their order of artifice, I ſhould then have a perfect conception of the machine itſelf; in a word, I ſhould have decompoſed and have recompoſed it.

This proceſs is called *Analyſis*. Hence, to analyſe is merely to obſerve the qualities of an object, either in its natural or in its artificial order, to the end that ſuch qualities may be repreſented in the mind in the relative and collective order in which they exiſt.

In ſtudying the ſciences by analyſis, the progreſs is eaſy, by the order which is obſerved, and obſtacles are removed by the tranſition from what is known to what is unknown.

Such was the track which the philoſophers at firſt followed, and it was that to which they ought to have adhered: they analyſed the propoſitions which they conſidered, and obtained general reſults, being ſuch as were applicable to every other propoſition of a ſimilar nature. From ſuch reſults they deduced axioms, definitions, and principles; the ſober practice of analyſis was abandoned, and while every thing was defined, not any thing was explained. The works of the philoſophers were thus begun by that with which they ought to have been concluded: the method itſelf was dignified with the appellation of *Syntheſis*, and obtruded upon the world as the method of learning. It is thus that the philoſophers erred, and that their errors have been adopted by poſterity.

In fact, to be enabled to conceive ideas which are new to me, it is neceſſary that they be elicited from thoſe which I may already poſſeſs. Whatever I do not know, whatever it is poſſible that I may learn, muſt be conſidered as a new link to be added to the chain of previous knowledge; and if there be a method to impart any ſubſequent knowledge, it muſt be the ſame as that by which you may yourſelf have acquired it. If you were to reflect upon the manner in which you have obtained inſtruction, you would eaſily impart to me what you have yourſelf diſcovered. Whence is it, then, that you begin my inſtruction by what is the complement of your own? Why do you accumulate axioms, definitions, and principles, till ſcience appear leſs your object than difficulty and embarraſſment? You do not perceive that you ſpeak a language which I do not underſtand, and which, indeed, is not to be underſtood. Hence, being unable of ſurmounting the difficulties which you have created, I reject with diſguſt the book which you preſent to me.

Analyſis, conſidered as to its proceſs and as to its effects, is properly the *lever* of the mind: to it we are indebted for the invention of the arts and ſciences, and for the means of bringing them to perfection. Analyſis is the precurſor of every diſcovery; and, without it, even the imagination itſelf, which is conſidered as the parent of talent, would be but a ſource of vague opinions, of prejudices, and of errors.

There are minds replete with judgment, ſuch as does not appear to be an effect of ſtudy, but which is, in fact, an effect of quick perception and of extenſive power of combination. As the ſtudy of perſons thus organized is effected without any premeditated deſign, they do not think of taking leſſons from any maſter, and they have the beſt maſter of all, which is nature; for it is nature which teaches them to analyſe the things which they ſtudy, and the little which they know is well known.

There are men of minds perverſely organized who are deep in ſtudy: they plume themſelves on poſſeſſing much method, but it is ſuch as only tends to deteriorate their judgment. In fact, when a method is not good, the more it be followed, the more it will miſlead. Vague notions, and words devoid of ſenſe, are by ſuch perſons adopted as principles: they compoſe a ſcientific jargon, expreſſive, as they imagine, of evidence, but which is alike deficient in truth as to what has been ſeen, or thought, or ſaid. Thus we can never analyſe our thoughts but inaſmuch as they may be themſelves derived from analyſis.

It is, therefore, by analyſis, and by analyſis only, that we can accompliſh our own inſtruction. Being the manner the moſt natural, it is the moſt ſimple, and we ſhall ſee, in the courſe of this work, that it is alſo the moſt ſhort.

Let us ceaſe, then, to begin our books by axioms, definitions, and principles; and inſtead of the language of obſcurity, let us endeavour to be clear and intelligible.

The Commercial Arithmetic was publiſhed about four months ago. While its novelty could not fail of attracting attention, it has obtained, by its ſimplicity, the commendation of all who have peruſed it. Without obtruding, however, any opinion of my own, I ſhall beg leave to refer my readers to the following criticiſm of *The Monthly Epitome* for September, 1805.

" It is a circumſtance affording much ground of complaint, that our common treatiſes on arithmetic, and the method of teaching it, in common uſe, are neither of them well adapted to the purpoſes for which they are intended; becauſe our young men in general come from ſchool with an imperfect knowledge of its common rules, with ſtill leſs knowledge of the fundamental principles on which they are built, and, what is worſe, with a degree of diſguſt acquired from its crabbed and myſterious appearance at ſchool, which prevents them from imagining its acquirement to be eaſy, or from attempting to conquer the difficulties in which it appears to be enveloped.

" Mr. Duboſt has endeavoured to do away all theſe objections againſt arithmetic in general, with a view, more particularly, to the aſſiſtance of the young merchant: we only recollect to have ſeen one elementary treatiſe on arithmetic written on this plan; the name of its author we forget, but it was directed to no particular department. The one under conſideration, therefore, has, beſides being better executed as far as it goes, the manifeſt advantage of the other, in being adapted to mercantile concerns, and conſequently having a better claim on the attention of thoſe for whom it is intended.

"With the view, then, of drawing young men from ſupineneſs, and of facilitating their progreſs in knowledge ſo uſeful and neceſſary, the author has given his rules with great perſpicuity, and illuſtrated them by reducing them to practice; or, more properly ſpeaking, he incorporates his rules and practice for the better illuſtration of both. *Hence his work exhibits a continued ſeries of reaſoning, rather than a lean crabbed treatiſe of a ſcience rendered more crabbed by the improper methods of teaching it at preſent adopted in ſchools.* It is true that, plain as it is, it will require ſome little attention; nevertheleſs, the fundamental principles, and the practice of arithmetic, will be found ſimple, and eaſy of comprehenſion.

"Equation of exchanges forms a particular and uſeful department of the author's attention, and he has made a ſeparate rule of it, in addition to thoſe commonly laid down in ſchool books; he has alſo adjoined an uſeful ſketch of the firſt principles of algebra, and has taken much pains in explaining terms which form no ſmall obſtacle in the way of boys at ſchool, where their teachers are often too idle, and in the country commonly too illiterate, to reduce ſuch terms to a level with their capacities.

"The writer of this article to this hour remembers, and that with the *moſt painful ſenſation,* the *diſguſt* which he experienced when learning the common rules of arithmetic. As an elementary work, therefore, he thinks The Commercial Arithmetic, on the whole, to be well worthy the attention of thoſe for whom it is particularly intended, and *highly deſerving of being introduced into our ſchools.*"

The Public at large, and the Merchants in particular, will judge for themſelves. If they have felt ſuch *painful ſenſation,* if they have experienced ſuch *diſguſt,* ſurely they will not ſuffer that the minds of their children be ſubject to ſimilar torture, while they poſſeſs the means of recommending to their preceptors an elementary book which will be found to be within the ſcope of the underſtanding of youth.

The preceptors themſelves will, on their part, be deſirous of abridging the pains which they take in teaching a ſcience, eaſy in itſelf, but which is rendered difficult by a deviation from the path of nature. They will ſee that The Commercial Arithmetic contains but few rules, but that the number is ſufficient to be the means of inſtructing their pupils, without difficulty, in all the calculations comprehended in The Elements of Commerce.

In a word, it is hoped that good ſenſe will prevail in this inſtance over habits, however inveterate.

SECOND CHAPTER.

The occaſion for commercial calculations recurs ſo frequently, and their uſe is ſo very neceſſary, that we cannot be too ſtrenuous in our endeavours to advance them to the higheſt degree of ſimplicity and of perfection. The mathematics afford the means of compaſſing this deſirable purpoſe; and, to bring them to bear upon this ſubject, is the object which I have had in view.

In the number of the treatiſes publiſhed abroad upon the practice of Commerce, there are ſeveral from which their authors have derived a well-earned reputation. In particular, *Ricard* among the Dutch, *Giraudeau* among the French, and *Marien* among the Spaniards, ſtand eminently diſtinguiſhed; and, above all, *Kruſe*, to whoſe labours the city of Hamburgh is ſo much indebted. Their works, however, are not elementary; and, however uſeful they may be to thoſe who are initiated in calculations, they are, as it were, out of the reach of others who have not that advantage.

The plan of thoſe authors has not been ſuch as nature ſuggeſted to them; they have not preſented their information to their readers in the order, and with the method, by which they acquired it themſelves. Hence it is that the ſtudy of their works is ſubject to extreme difficulty; that the attention of the ſtudent is not directed from object to object in ſucceſſion; that their rules for calculation are not demonſtrated; that the ſubjects which they have undertaken are rather ſketched than profoundly treated; and, laſtly, that, by want of a well-arranged diviſion of the matter of their works, they have not been able to embrace the calculations of commerce in the extent of which they are ſuſceptible.

It has thus happened that there are not any elementary books by which ſuch calculations might be learned; and, as we cannot ſufficiently appreciate that which we know but imperfectly, it is not ſurpriſing that the calculations of commerce be ſo little the object of ſtudy, and that many merchants regard them, as to theory, with indifference. Perhaps I ſhall be aſked, How then are they learned? To which I ſhall reply, By the tradition of accompting-houſes. In every branch of buſineſs there are certain operations which frequently recur, and which therefore become familiar. We know, that, in order to reſolve them, it is required to multiply by a certain number, and to divide by a certain other; and, at the very moment when we mechanically perform operations ſimilar to thoſe which we have repeatedly ſeen, we are often incapable of determining thoſe whoſe ſolution is beyond the pale of our habits, even though ſuch operations be abſolutely collateral to the former. Nevertheleſs, if the treatiſes of arithmetic in uſe in our ſchools, had been limited to the production of a ſmall number of examples, accompanied by good demonſtrations, in lieu of very many examples which are deſtitute of demonſtration; if they had been properly addreſſed to our intellect, and that they had taught us that the reſults derived from the analyſis of an operation are applicable to the ſolution of every operation of a ſimilar nature, we ſhould know that calculations of the ſame kind, being ſubject to the ſame laws, may be reſpectively reſolved by one and the ſame proceſs.

In treating of the calculations of commerce, I ſhall endeavour to make them known by the method which I have myſelf employed to acquire the knowledge of them. I ſhall begin by thoſe operations which are the moſt ſimple, and, proceeding to thoſe which are more complicated, according to their connection with the ſeries, I ſhall attempt a gradual removal of difficulties, with a view to enable my readers to overcome any future obſtacle, without any other aid than that of the exerciſe of their own intelligence and individual application. For this purpoſe I ſhall not outſtep the ideas which they may have upon the ſubject, admitting that they be familiar with the theory of fractions and of proportions: and if they ſhould not poſſeſs ſuch information, I would refer them to the Commercial Arithmetic, commencing at the loweſt point of the ſcale.

I ſhall now endeavour to convey a preciſe notion of the ſeveral ſubjects contained in the courſe of this work.

FIRST VOLUME.

Of different Calculations.

My attention has been directed, in the firſt inſtance, to the calculation of tare and of tret; they frequently occur, and their ſimplification is uſeful. From ſuch conſideration I have proceeded to that of the calculation of commiſſion, of brokerage, and of premiums of inſurance. I have then treated of the calculation of intereſt, of which I have given a new demonſtration; adverting, at the ſame time, to the methods ſeverally uſed by the principal commercial nations. This part of my work, however, is little elſe than an extract from the Commercial Arithmetic, which I have been induced to inſert by reaſon of its utility in accompting-houſes.

Of Operations of Exchange.

The ſolution of exchange-operations is of great importance in buſineſs. The perſons who have undertaken the laborious compilation of tables of exchange, have thought, perhaps, to add to their utility by giving examples, which, however, they have done in a manner to introduce difficulty where not any ſhould exiſt. In fact, admitting a knowledge of the diviſions and of the relations of monies, as well as that of the conſtruction of a courſe of exchange, nothing more is requiſite, in order to ſolve any kind of propoſition, than to ſelect the numbers appertaining to the dividend and to the diviſor, when the reſpective multiplications and diviſions may be immediately effected.

After having penned certain preliminary ideas upon the theory of exchanges, I have devoted my attention to the relative calculations; and, with a view to reſolve them with facility, by means of the ready determination of the dividend and of the diviſor in each operation, I have introduced a new rule in buſineſs, which I have denominated the *rule of equation,* and of which I have demonſtrated the principle and the conſequences. While applying this rule to the principal operations of exchange of each place and country, according to an alphabetical arrangement, I have ſeverally prefixed to them a deſcription of their reſpective monies of exchange and of account, as well as of the various regulations in uſe, and an explanation of their reſpective quotations of exchange.

This treatiſe is grounded upon actual quotations of exchange during the years 1804 and 1805; and, among a few places which eſcaped my notice, I may mention thoſe of Konigſberg and Stettin. Nevertheleſs, the courſes of exchange of ſuch places will be found under their reſpective heads, in the Deſcription of the Monies, Weights, and Meaſures.

Of Arbitrations of Exchange.

In regard to three given places, there are neceſſarily as many kinds of exchange, and there cannot be more. When two of any three exchanges be known, the object of arbitrations, in general, is that of determining, by the combination of the two, the third exchange, which will be in proportion to the former. Having before me a quotation of all the exchanges current at a certain place, and alſo a ſimilar quotation from another place, I am enabled, by means of a ſucceſſive combination of the nature juſt deſcribed, to diſcover the proportional exchange between either of the two places whence the quotations have been received, and each of thoſe places which are reſpectively enumerated in the quotations themſelves.

It is by the determination of proportional exchanges that we are guided in the choice of an intermediate place affording the greateſt advantage, either as the place upon which we ſhould draw, or as that to which we ſhould remit; and, as we are our own *arbiters* in ſuch caſes, the name of *arbitration* has been given to this kind of operations.

Arbitrations of exchange are, therefore, properly ſpeaking, one of the means of commercial economy; and a familiarity with ſuch means may be conſidered as the baſis of the ſcience of a merchant. In treating of this deſcription of calculations, I have made mention, in the firſt inſtance, of the rule of conjunction, which is generally uſed for their ſolution. I have, at the ſame time, pointed out the relation between that rule and the rule of equation, of which I have already ſpoken, and which, indeed, I have preferred, as it poſſeſſes the obvious property of ſimplifying the calculations in queſtion, by determining at once, and by a method eaſily apprehended, the dividend and the diviſor in each operation.

After having deſcribed the principal operations of the arbitrations between London and thoſe of the places upon the continent where affairs in exchanges are the moſt conſiderable, and then proceeded to their ſolution by the means of common arithmetic, I have again effected the ſolution of the ſame operations by *logarithms*. In mentioning this word, I have to requeſt that thoſe of my readers who may not yet have made uſe of logarithms, will lay aſide any ſiniſter prepoſſeſſion upon the ſubject; for I can aſſure them, that, to calculate by logarithms, is neither more or leſs than to make an addition inſtead of a multiplication, and a ſubtraction inſtead of a diviſion.

Actual operations of arbitrations of exchange neceſſarily give riſe to charges of commiſſion, of brokerage, and of poſtages of letters, to be paid in the intermediate places which are employed; and the conſideration of this matter is as difficult as it is important. After having ſpecially inveſtigated the ſubject, I have treated of ſeveral other rules of minor importance; and I have concluded this part of my work by a rule tending to ſhew the profit per cent reſulting from each operation.

Of Speculations in Exchange and Banking Operations.

Speculations in exchange are generally undertaken by merchants in proportion to their reſpective capitals and degree of familiarity with the ſubject. It follows that ſuch operations may aſſume an almoſt infinite number of ſhapes; and, in order not to exceed the bounds which I had ſet to my work, I have thought it expedient to confine myſelf to the analyſis of two operations of frequent recurrence in buſineſs, and which will ſerve to give a preciſe idea of this deſcription of enterprize.

Speculations in exchange are neceſſarily followed by banking orders, which are tranſmitted by the principals to their correſpondents. When ſuch orders cannot be executed in ſtrict conformity to the conditions preſcribed, it is of importance to conſider whether, notwithſtanding the variations which have enſued in the courſes of exchange, it be not practicable to effect the orders at the exiſting rates of exchange; or, in other words, to conſider whether the new combination may not afford ſimilar reſults, in the aggregate, to thoſe which the ſpeculator contemplated. I have, therefore, concluded this treatiſe by two rules, which ſerve to determine thoſe caſes in which any given order may be executed within the limits preſcribed, and I have ſubjoined the application of thoſe rules to ſeveral examples relative to banking orders, both ſimple and compound.

Of Exchange Circulations.

The extent to which circulations of exchange are carried is generally determined by the caſual wants of thoſe who undertake to obtain the temporary uſe of a capital, according to the degree of credit which they may enjoy. When conſidered, however, not as an expedient, but as creative means of advantage, circulations of exchange require, in the principal, perſpicacity of combination, and, in the agents, intelligence of execution.

The conſideration of this branch is of great importance. While the practice is of much uſe to merchants, by the aſſiſtance which it affords as to an extenſion of their ſpeculations, it is ſtill more uſeful to governments, by facilitating the means of payment of any ſubſidies which they may have ſtipulated to grant. I have therefore ſpoken of exchange circulations under both theſe points of view, and I have concluded the firſt volume by a deſcription of a very extenſive circulation which took place in the courſe of the year 1804, upon occaſion of the payment of a ſubſidy by Spain to France. An operation of this nature, rather than general reaſoning, will evince the utility of a knowledge of arbitrations; the latter being the baſis of ſpeculations in exchanges, and of the circulations to which I have adverted.

SECOND VOLUME.

Of Operations of Specie and Bullion.

After having conſidered the ſeveral branches of ex change under their reſpective points of view, I have proceeded to other operations intimately connected with thoſe in exchange, namely, the operations relating to the importation and to the exportation of precious metals, either in bars or in coin. Having directed my attention, in the firſt inſtance, to certain preliminary points, I have afterwards treated of this branch of commerce between England, France, Hamburgh, Holland, Portugal, and Spain. I have ſucceſſively detailed the degrees of purity ſeverally required in the ſale of precious metals in thoſe countries; the weights by which they are ſold; their diviſion and relation, as well as the reſpective conditions of ſale. Laſtly, after having ſpecially directed my endeavours to the ſimplification of the calculations of the accompting-houſe, I have concluded this treatiſe, of no leſs importance than novelty in buſineſs, by 45 operations, in which the dividend and the diviſor are determined by the rule of equation, and the ſolution of which is effected by means of fixed logarithms, ſo as to reduce whole pages of figures to one addition and to two ſubtractions at moſt, and ſometimes even to a ſimple addition, or to a ſimple ſubtraction.

Of Pars of Exchange and of Coins.

From the treatiſes upon operations of exchange in general, and of thoſe relating to the trade in precious metals, the tranſition is natural to the conſideration of pars of exchange and of coins, which may now be readily explained. In attempting to refute the errors ſanctioned by writers who have ſpoken of the intrinſic par of exchange, without having correctly underſtood the ſubject, I have proved, that, in reſpect to two countries, there muſt be two pars of exchange, the one reſulting from a compariſon of their coins of gold, and the other from that of their coins of ſilver, and that theſe pars muſt remain diſtinct. I have then pointed out the method of calculating them; and, after having treated of the par of coins, and of the *eventual* par of exchange, I have concluded this part of my work by 22 operations, in which I have determined the intrinſic par of exchange between London and thoſe countries or places with which an exchange is open, by means of a ſingle equation founded upon the ſucceſſive compariſon of gold and ſilver coins, in reſpect to their weight, ſtandard, and value.

Of Practical Speculations in Merchandize.

The calculations which are made to diſcover the advantages that may reſult from the importation or the exportation of merchandize, are, in general, the moſt difficult, by reaſon of the number of data to be conſidered; and hence it is that, though the moſt eſſential, they are, of all the calculations of commerce, the leaſt known.

Conſidered in the aggregate, they are innumerable; and, as it would be foreign from the plan of this work to attempt a multifarious deſcription, I have confined myſelf to giving an analyſis of ſix operations, to be each of guidance under the following circumſtances.

The firſt, in reſpect to the intended importation or exportation of merchandize by the criteria of invoices and of accounts of ſale, either real or ſimulate.

The ſecond, in reſpect to the importation of merchandize by the criterion of an invoice, either real or ſimulate, as received from abroad.

The third, when it may be intended to export merchandize by the criterion of a real or ſimulate account of ſale received from abroad.

The fourth, when the object be that of grounding a ſpeculation upon a ſimple price current of merchandize.

The fifth, to determine the practicability of the execution of *orders* for merchandize.

The ſixth, to aſcertain the place which may afford the greateſt profit, either as that where purchaſes may be ordered, or where ſales may be effected.

This treatiſe is new, uſeful, and important. It will intereſt the mercantile community in general, whether merchants or manufacturers, and I have endeavoured to render it as eaſy as poſſible, being of itſelf the moſt difficult. In fact, to underſtand it, and to make uſe of it, nothing more is required than to be acquainted with the calculation of operations of exchange.

Deſcription of Monies, Weights, and Meaſures.

After having detailed the calculations of commerce in all their extent, I have deſcribed the monies, weights, and meaſures, of the ſeveral commercial nations, by an alphabetical arrangement of their names. I have ſucceſſively conſidered the ſubjects relating to each country and to each place; and, as I have purpoſely collected them all under one point of view, repetition has ſometimes been unavoidable, particularly in reſpect to the monies of exchange. In order to obviate any confuſion as to the names of the monies, weights, and meaſures, I have adopted, as far as I have been able, the languages reſpectively uſed in regard to the orthography of the names of the places, and of the quantities deſcribed. This treatiſe, which is of conſiderable extent, is of a degree of importance that can be felt only in proportion to a knowledge of calculations; and, by perſons poſſeſſing this knowledge extenſively, it cannot fail of being very much prized: it will intereſt almoſt every claſs of ſociety, and, above all, travellers and merchants. Without a knowledge of monies, the former are embarraſſed in the tranſactions relative to their expenditure, and the latter expoſe themſelves to the danger of making erroneous ſpeculations.

Tables of Monies, Weights, and Meaſures.

Theſe tables, the utility of which is evident, ſerve to determine a compariſon between the monies, weights, and meaſures of England, and the monies, weights, and meaſures of foreign countries, according to their reſpective deſcription in the preceding treatiſe. The ſame tables relate to the following heads:

The firſt, to monies of account;
The ſecond, to coins of gold;
The third, to coins of ſilver;
The fourth, to the weights uſed in the trade in precious metals;
The fifth, to the weights uſed in the ſale of merchandize;
The ſixth, to meaſures for dry goods;
The ſeventh, to meaſures for liquids;
The eighth, to cloth meaſures;
The ninth, to long meaſures;
The tenth, to land meaſures;
The eleventh, to itinerary meaſures.

Table of Logarithms.

By the Table of this name, The Elements of Commerce are concluded. It is ſhort, ſimple, and adapted to ſuch of the calculations in this work, the ſolution of which is determined by logarithms. The inſtructions prefixed to the table will ſhew the application of it, which is a matter of the greateſt eaſe. Indeed, it is this property which has prompted me to offer a table of logarithms, ſuch as merchants may be induced to employ in their calculations. It will be obſerved, however, that it is too limited to be applicable to the ſolution of calculations in general. I ſhall, therefore, ſoon publiſh a ſeparate table of much greater extent, when I ſhall take occaſion to treat more at large of calculation by logarithms.

Without dwelling at preſent upon the advantages of this mode of calculation, I ſhall content myſelf with ſaying, that I have been enabled, by means of logarithms, to accompliſh that in a month, in reſpect to the reduction of the monies, weights, and meaſures of foreign countries, which I ſhould not have been enabled to have accompliſhed by the means of ordinary arithmetic in a year. And I do not at all doubt but that thoſe who ſhall have once experienced the pleaſing facility of calculating by logarithms, will renounce, for ever, to the laborious calculation ariſing from multiplications and diviſions by natural numbers.

By this outline, however faint, of the plan of The Elements of Commerce, the reader may now judge that this work is widely different from thoſe which have preceded it. On looking over it, he will perceive, that, with exception of a very few caſes, I have conſtantly made uſe of the *univerſal rule of equation,* by which the dividend and the diviſor in each operation are *infallibly* determined; and that I have not had recourſe to algebraic calculations, inaſmuch as they cannot be neceſſary but in the ſolution of certain problems which relate to matters of curioſity, rather than to reſearches of practical utility.

I could have wiſhed to have been able to have ſpoken in this work of book-keeping; but a ſubject of that importance requires a ſeparate treatiſe. Among the different ſyſtems which have been hitherto publiſhed with a view to ſimplify this eſſential branch of the ſcience of a merchant, not one has ſucceeded, ſince there is not any which is elementary. On this account it is that we have been ſo repeatedly told, that not any treatiſe upon book-keeping could be compoſed ſo as to be general: the aſſertion muſt have been made, however, without reflection, that, if it be not poſſible to foreſee all the entries relative to the ſeveral branches of buſineſs, it is at leaſt practicable to analyſe the general methods which apply to thoſe branches. Indeed, there are ſome merchants, guided by good ſenſe and by their experience, who have executed what has not been done by authors. In ſeveral accompting-houſes of the firſt eminence in Europe, I have ſeen an admirable arrangement of books, which, if developed with ſimplicity, would become of important ſervice to the commercial world. A treatiſe of this nature, and upon a ſubject ſo barren, would be, however, a work of much time and labour; and, in order to undertake it, it would be neceſſary to be encouraged by a ſubſcription which would not leave any doubt as to the compenſation to be expected.

The plan of The Elements of Commerce is, therefore, fixed; and, whatever may be the ſucceſs of the work, the corrections which I may make, in the event of another edition, will tend only to ſimplify, or to extend, the explanations given, and to point out the changes reſulting from the ſtate of political convulſion which is at preſent the fate of the ſeveral ſtates upon the continent.

In treating of the ſcience of calculations, all the rules which I have given originate with myſelf; and all the operations which I have deſcribed are founded upon the preſent ſituation of affairs, and upon my own experience and obſervations. But if I have omitted, in this part of my work, to avail myſelf of the treatiſes which have been publiſhed upon the practice of commerce, I have neceſſarily conſulted them in whatever related to the knowledge of monies, weights, and meaſures. I ſhall eſteem myſelf happy, and feel intimate ſatisfaction, if the Public judge favourably of the labour which I have undertaken, and decide that The Elements of Commerce be of a nature to anſwer the double purpoſe of being uſeful to accompliſhed merchants, and of tending to the inſtruction of others.

OF
DIFFERENT
CALCULATIONS.

OF

DIFFERENT CALCULATIONS.

OF DEDUCTIONS FROM WEIGHTS.

DRAFT is a deduction from the original weight of certain goods, to turn the ſcale in favour of the buyer.

Cloff, when deducted, is an allowance of two pounds on every bale for the weight of the wrapper in which the merchandiſe is contained.

To make ſuch deductions, it is only requiſite to ſubtract the amount of the draft, or cloff, from the original weight, and the remainder is called *groſs weight.*

OF TARE.

Tare is an allowance for the weight of packages, granted either at ſo much per cwt. or per 100 lbs., when the real tare is not deducted : if, however, the allowance be leſs than the real tare, the latter may, by right, be demanded. After the deduction of the tare, what remains is called *net weight.*

Tare is calculated by a rule of three direct, of which the firſt term is 112 lbs. or 100 lbs., and the ſecond the tare agreed : thus, the third term, which is the groſs weight of the merchandiſe, muſt contain the fourth term of the proportion, or the tare to be deducted, as often as the firſt term contains the tare agreed.

FIRST EXAMPLE.

What is the tare of 138 *cwts.* 2 *qrs.* 8 *lbs. of cotton at* 4 *lbs. per cwt.?*

Repreſenting the fourth term by x, I have the following proportion :

112 : 4 :: 138 2 8 : x,

whence I make the following calculation.

```
            138  2  8
                    4
            ---------
     112)554  1  4(4 cwt. 3 qrs. 22 2/7 lbs. reſult.
         106
           4
         ---
         425
          89
          28
         ---
         716
        178
        ----
        2496
         256
          32
```

As the end of arithmetic is the abridgment of operations, and as the ſhorteſt method of dividing may not be generally known, I think it proper to explain the calculation in the preceding example. Having aimed in this work at uniformity of proceedings, I preſume that the explanation referred to will ſuffice for the underſtanding of all the diviſions which will be noticed.

After having ſeen that the three figures of the dividend can only contain the three figures of the diviſor a certain number of times under ten, I find that 554 contain 112 four times, wherefore I write 4 in the quotient's place; and inſtead of inſerting under 554 the product of 112 by 4, to perform the ſubtraction, I multiply 2 by 4 with the intention of deducting the product 8 from the third figure of the dividend; but as that figure is leſs than 8, I borrow ten from the preceding figure, which added to 4, make 14; and deducting 8 from the latter, there remain 6, which I write under the figure 4.

In order to keep account of the ten thus borrowed, inſtead of ſuppoſing the figure 5 reduced by the unit which it furniſhed, I retain the unit, and add it to the next product. Thus, continuing the multiplication, I ſay 4 times 1 are 4, and 1 which I have retained make 5: I ſubtract 5 from 5, and write 0 underneath the latter. Continuing in the ſame way, I ſay 4 times 1 make 4, which, ſubtracted from 5, leave 1.

The 106 which remain are evidently cwts.; therefore, to find how many quarters there ſhould be in the quotient, I multiply 106 by 4, the number of quarters in 1 cwt., and add to the product the 1 quarter which has remained hitherto undivided in the dividend, which gives 25, &c. Dividing the product 425 in the manner above mentioned, there remain 89, which are obviouſly ſo many quarters. Then, to find how many lbs. there ſhould be in the quotient, I multiply 89 by 28, ſince 28 lbs. make 1 quarter, adding to the product of 9 by 8, 4 lbs. which are ſtill in the dividend, &c.; and, dividing the product 2496 in the ſame manner, there remain 32. This number 32 becomes the numerator of the fraction $\frac{32}{112}$; of which the diviſor 112 is the denominator, and this fraction is reducible to $\frac{2}{7}$.

It is known, that, without affecting a proportion, its two firſt terms may be divided by a given number; whence it ariſes, that, in the above mentioned proportion 112 : 4 :: 138 2 8 : x, I might have divided the two firſt terms by the ſame number 4, and have found the following proportion,

28 : 1 :: 138 2 8 : x;

and, as the multiplication of 138 2 8 by 1 does not occaſion any alteration in the firſt of theſe numbers, it is evident that the operation is reduced to dividing 138 2 8 by 28, as follows:

```
28)138  2  8(4  3  22⅖ reſult.
     26
      4
    ----
    106
     22
     28
    ----
    184
    44
    ----
    624
     64
      8
```

And it is ſeen that the proportion 112 : 4 :: 138 2 8 : x has not been affected by the diviſion of its two firſt terms by the ſame number, ſince the reſult of this laſt operation is the ſame as that of the firſt.

It is acknowledged, that, the more calculations are ſimplified, the leſs are we liable to errors in making them. It will therefore be well, if, whenever we have to calculate an amount of tare at ſo much per cwt., we examine whether the two firſt terms of the proportion may not be reduced; for inſtance, if the tare agreed were 16, the two firſt terms 112 : 16 : : might each be divided by the ſame number 16, and reduced to 7 :

1 : : ; whence we ſee, that, inſtead of multiplying the groſs weight by 16, and dividing the product by 112, it would only be requiſite to divide the groſs weight by 7, which would give the ſame reſult.

SECOND EXAMPLE.

What is the tare of 36420 *lbs. at* 8 *lbs. per cent ?*

I ſtate the following proportion,

100 : 8 : : 36420 : x,

whence the following calculation.

36420
8

1,00)2913,60($2913\frac{3}{5}$ reſult.

It is obvious, that, in this operation, and whenever we have to calculate an amount of tare at ſo much per cent, it is only requiſite to multiply the groſs weight by the tare agreed, and to ſeparate the two right hand figures of the product.

N. B. In the calculation of tare, when the remainder of the diviſion is or exceeds $\frac{1}{2}$, it is cuſtomary to allow 1 lb. more for that fraction, which is not noticed when it is under.

OF TRET.

Tret is a farther allowance of 4 lbs. in 104 lbs. on the weight of ſome goods ſubject to waſte, in order that the weight may anſwer when the goods are retailed.

It has been ſeen, that the remainder of the groſs weight, after the deduction of the tare, is called net weight; but, when tret is allowed, that remainder is called *ſuttle,* which after the deduction of tret is called *net ;* ſo that the tare is always deducted from the groſs weight, and the tret from the ſuttle.

Tret is calculated, in the ſame manner as tare, by a rule of three direct.

FIRST EXAMPLE.

Required the tret of 124 *cwts.* 3 *qrs.* 16 *lbs. of cinnamon.*

It is evident that 104 and 4 are the two firſt terms of a proportion, of which 124 3 16 is the third; therefore, by repreſenting the fourth term by x, we ſhall have the following proportion,

104 : 4 : : 124 3 16 : x.

But as tret is always an allowance of 4 lbs. on 104 lbs., by dividing the two firſt terms 104 and 4 by the ſame number 4, we have the following proportion,

26 : 1 : : 124 3 16 : x.

In fact, it is evident that, when 4 lbs. are allowed for 104 lbs., 1 lb. is allowed for 26; therefore, inſtead of multiplying 124 3 16 by 4, and dividing the product by 104, as is generally done, it is only neceſſary to divide the ſuttle by 26, which will give the ſame reſult. Thus, to find the tret of 124 3 16, I make the following diviſion.

26)124 3 16(4 cwts. 3 qrs. 6 lbs. reſult.

20

4

83

5

28

156

0

SECOND EXAMPLE.

Required the tret of 28450 *lbs.*

By ſtating the following proportion,

26 : 1 : : 28450 : x,

there is only one diviſion to be made as follows:

26)28450(1094 reſult.
245
110
6

N. B. 1 lb. more is allowed when the remainder of the diviſion is or exceeds ½.

OF COMMISSION, PREMIUMS OF INSURANCE, AND BROKERAGE.

Commiſſion is a ſum paid to merchants for buying, ſelling, paying, negociating, claiming, remitting, or forwarding, any deſcription of property or of merchandiſe.

A premium of inſurance is a ſum paid for cauſing any amount of goods to be inſured, and for which the inſurer aſſumes the dangers and riſks to which the amount inſured may be expoſed.

Brokerage is a ſum paid to intermediate agents between merchants for the purchaſe, ſale, and negociation; and for claiming, receiving, inſuring, or forwarding, any deſcription of property or of merchandiſe.

Theſe allowances are calculated by a rule of three, of which the firſt term is always 100, the ſecond term the rate of allowance, and the third term the ſum upon which the allowance is granted, while the fourth term of the proportion is the allowance to be made.

FIRST EXAMPLE.

What is the commiſſion on 834l 15s 6d at 2½ per cent?

I ſtate the following proportion, in which the fourth term is repreſented by x,

100 : 2½ : : 834 15 6 : x;

whence the following calculation :

834 15 6
2½

1669 11 0
for ½ 417 7 9

1,00)20,86 18 9(20 17 4 reſult.
20

17,38
12

85
38

4,65

SECOND EXAMPLE.

Required the inſurance on 1083*l at a premium of* 4 *guineas, that is,* 4 *pounds* 4 *ſhillings, per cent.*

100 : 4 4 :: 1083 : x

1083
4 4

4332
For 4 ſhillings 216 12

1,00)45,48 12(45 9 8 reſult.
20

9,72
12

144
72

8,64

It is uſual, among merchants, to cauſe inſurances to be effected, ſo as to anſwer the purpoſe not only of ſecuring the eventual repayment of the actual value inſured, but alſo of the premium of inſurance itſelf and of the incidental charges. In fact, as in the caſe of a total loſs the reimburſement of the ſum inſured is made under certain deductions, it is evident, that, to recover the whole, the ſum to be inſured ſhould be greater in proportion as the deductions are more conſiderable.

The following calculation will ſhew how ſuch determinable ſum is aſcertained.

Suppoſe an inſurance at a premium of 10 guineas per cent upon - -			100*l* 0*s*
DEDUCTIONS.			
Amount of premium - - - -		10*l* 10*s*	
Brokerage - -	at ½ per cent	0 10	
Policy - - - -	¼ ditto	0 5	
Charges of recovery	2½ ditto	2 10	
			13 15
			86*l* 5*s*

Thus, in caſe of recovery, as the aſſured will have already made a diſburſement of the premium, &c. and as the charges of recovery will be a farther defalcation, it will be found that, of the 100*l* inſured, not more than 86*l* 5*s* will remain. Hence it is, that, in order to cover the principal and acceſſories, or the whole riſk, of 840, it would be requiſite to cauſe an inſurance to be effected upon a ſum which ſhould contain 840 in the ſame manner as 100 contains 86 5. We ſhould therefore ſtate the following proportion,

$$86\ 5 : 100 :: 840 : x;$$

whence it is ſeen, that, to cover the riſks of 840*l* at the premium of 10 guineas per cent, it is neceſſary that the inſurance ſhould be upon 974*l*.

THIRD EXAMPLE.

What is the brokerage on 1536*l* 8*s* 8*d at* $\frac{1}{8}$ *per cent?*

100 : $\frac{1}{8}$ :: 1536 8 8 : x
1536 8 8
$\frac{1}{8}$
1,00)1,92 1 1(1 18 4 reſult.
20
18,41
12
83
41
4,93

The operations above mentioned are not ſuſceptible of reduction, becauſe the diviſor, 100, is the moſt convenient, ſince, to divide by 100, it is only requiſite, as it has been ſeen, to ſeparate by a comma the two laſt figures of the dividend, placing in the quotient the figures which are on the left of the comma.

OF INTEREST.

The advantages which a ſum of money procures to the man who makes uſe of it, either in the operations of commerce, or in any productive work, are the greater, the oftener he can renew thoſe operations, or the more he can increaſe ſuch work. Hence it is, that a man who borrows a ſum of money for his own uſe, muſt, when he returns it after a certain period, add a ſum to the principal, in order to indemnify the lender for the advantages which he would have himſelf procured by the uſe of the ſame ſum. Such is the idea to be entertained of the intereſt of money. In order to determine its application, we refer every ſum to that of 100 pounds, taken as an unit, and agree as to the produce of the latter at the end of a year. This caſe has been foreſeen by the legiſlature, and the rate of intereſt is fixed in England at 5 per cent per annum.

EXAMPLE.

What is the intereſt on 9125l for a year?

It will be perceived, that 9125*l* will contain the intereſt to be paid, as often as 100 contain 5; therefore, I ſtate the following proportion, in which the fourth term is repreſented by x.

$$100 : 5 :: 9125 : x.$$

Upon examination of this proportion, I perceive that I may, without affecting it, reduce it to the following:

$$20 : 1 :: 9125 : x.$$

In fact, it is evident, that, when 5 pounds of intereſt are given for 100 pounds, one pound is given for twenty; and therefore there is, in the preceding proportion, only one diviſion to be made.

20)9125(456 5 reſult.
112
125
5

Now, if I wiſh to find the intereſt on 9125*l* for one day, I divide the quotient 456*l* 5*s*, or the intereſt for a year, by 365, being the number of days contained in the year, as follows:

365)456 5(1 5 reſult.
91
20
———
1825
0

It is obvious, that, after having obtained the intereſt for one day, if I wiſh to find that for any number of days, I have only to multiply the intereſt for one day by the given number of days. Thus, to find the intereſt on 9125*l* for 57 days, I multiply the quotient 1*l* 5*s*, or the intereſt for one day, by 57.

57
1 5
———
57
For 5 ſhillings 14 5
———
71 5 reſult.

We find, therefore, that the intereſt on 9125*l* for 57 days, at the rate of 5 per cent per annum, is 71*l* 5*s*.

To obtain, however, that intereſt, we have performed three operations, which, in buſineſs, are reduced to one: thus,

In the firſt operation, I divided 9125*l* by 20, which gave a quotient of 456*l* 5*s*. In the ſecond, I divided the ſame quotient 456 5 by 365, which gave 1*l* 5*s*; but, it is evident, that, if I had divided 9125*l* at once by 7300, that is, by the product of the two diviſors 20 and 365, I ſhould have found the ſame reſult 1*l* 5*s*.

In the third operation, I multiplied the quotient 1*l* 5*s* by 57, which gave 71*l* 5*s*.

If, however, inſtead of multiplying the quotient 1*l* 5*s* by 57, I had multiplied the principal 9125*l* by 57, and divided the product by the aggregate diviſor 7300, it is evident that I ſhould have obtained by that ſingle operation a reſult exactly ſimilar to the ultimate reſult of the three operations; as follows:

```
              9125
                57
              ----
             63875
            45625
            -----
   7300)520125(71  5 reſult.
              9125
              1825
                20
             -----
             36500
                 0
```

Hence I ſhall conclude, that, to calculate the intereſt upon a ſum, for any number of days, at the rate of 5 per cent per annum, it is only requiſite to ſtate a proportion of which the firſt term be in every caſe 7300, and the ſecond term the number of days for which intereſt is to be paid: thus, the third term, which is the ſum given, will contain the intereſt to be paid, as often as 7300 may contain the number of days. For example, in the preceding inſtance, I ſhould have ſtated the following proportion:

7300 : 57 :: 9125 : x.

Whence the following general rule: *to calculate intereſt, multiply the principal by the number of days, and divide the product by* 7300.

In order to facilitate the calculation of intereſt, if the ſum be partly fractional, it is cuſtomary, when the number of ſhillings is or exceeds 10, to add an unit to the number of pounds; and, on the other hand, when the number of ſhillings is leſs than 10, they are not included.

Intereſt in accounts current is calculated as follows. Multiply each item by the number of days; place the product in the reſpective columns of intereſt, and divide the balance either to the debit or credit by 7300, agreeably with the following ſpecimen.

Account current balanced to 31ſt December.

Due.	Days.	Intereſt.	Sums.			Due.	Days.	Intereſt.	Sums.		
13 Aug.	140	370860	2648	10	0	31 Aug.	122	976	8	0	0
18 Sept.	104	1872	18	1	0	5 Oct.	87	3915	45	3	9
2 Oct.	90	2880	31	19	7	10 Nov.	51	15606	305	10	10
26 Do.	66	16302	246	17	6	11 Dec.	20	48720	2436	9	11
16 Nov.	45	1485	33	0	0	Balance of Int.		324182			
		393399						393399			
Amount of Intereſt......			44	8	2	Balance of Account......			227	11	9
			3022	16	3				3022	16	3

Before I proceed, I ſhall obſerve, that, in leap years, the firſt term of the proportion ſhould be 7320, product of 20 by 366 days; but it is uſual to diſregard the additional day, and always to divide by 7300.

Since, to calculate intereſt at 5 per cent per annum, we ſee that we ſhould divide by the fixed number 7300, we may conclude that other fixed numbers may be obtained for ſimilar calculations at other rates. In fact, if I had to calculate the intereſt of a ſum at 4 per cent per annum, I ſhould ſtate the following proportion, in order to obtain a fixed number as a diviſor by which I might facilitate my calculation.

$$4 : 5 :: 7300 : x.$$

Intereſt at 4 per cent being leſs than at 5, it is evident that the diviſor in the former caſe muſt be greater than the diviſor in the latter: I have therefore placed 4, in the preceding proportion, as the firſt term, to obtain a diviſor greater than 7300, and I find the fourth term of the proportion above mentioned to be 9125. Thus, to aſcertain the intereſt on a ſum at 4 per cent, it is only requiſite to ſubſtitute the fixed number 9125 to the number 7300, that is, to divide by 9125.

By means of this principle, and by following a ſimilar method, other fixed diviſors may be found.

At various periods, the exceſſive ſcarcity of the circulating medium, the exactions of lenders, and the urgent wants of borrowers, had given riſe to the ſtipulation of an exorbitant intereſt, whence is dated the practice of uſury. In order to repreſs ſuch abuſes, it has been determined by the legiſlature of every civilized country, that thoſe obligations in which the intereſt ſhould exceed certain limits ſhould be conſidered uſurious and void. It happens, however, not unfrequently, that critical circumſtances and imperious neceſſity ſuperſede the operation of the laws, and that intereſt is publickly paid at a rate beyond that which the laws permit. For inſtance, in Holland, where the legal intereſt is at 4 per cent per annum, it is not uncommon to ſee bills of exchange diſcounted at 6, 7, and 8 per cent, notwithſtanding that this may have been often done at the moderate rate of 2 and 2½.

In France, where the legal intereſt is at 5 per cent, it has been known to riſe, in the courſe of the revolution, as high as 24 per cent per annum, and even more, while the preſent rate in buſineſs is generally from 6 to 9 per cent per annum.

In Spain, ſince the eſtabliſhment of the Bank of San Carlos, bills of exchange are diſcounted at Madrid at 4½ and at Cadiz at 5 per cent per annum; but the merchants generally charge 6 per cent.

In Italy and Portugal the intereſt is eſtabliſhed at 6 per cent per annum; but it varies in thoſe countries, as well as at Hamburgh, according to commercial urgency, and the ſcarcity, or abundance, of caſh.

Hence it is, that merchants, who purpoſe opening accounts current with others reſiding in other countries, have introduced the cuſtom of fixing, previouſly, the rate of intereſt to be charged upon thoſe ſums of which the accounts juſt mentioned may conſiſt. Such intereſt is ſettled in England at 5 per cent per annum, though it be occaſionally at 6 in certain accounts with foreign merchants.

In order to facilitate the calculation of intereſt upon the Continent, it is generally agreed to conſider the year as compoſed of only 360 days, that is, of 12 months compoſed of 30 days each, and it is upon this footing that a lender charges the intereſt upon his money; ſo that, reckoning the intereſt from the day of the advance to the day of repayment, the borrower pays, in fact, a ſmall ſurplus, in the proportion of 360 to 365, or 366 if it be leap-year.

It follows, that in calculating intereſt in France, in Spain, in Italy, in Portugal, in Holland, and at Hamburgh, at the rate of 5 per cent, they make uſe of 7200 as a diviſor, being the product of 360 days by 20, inſtead of 7300, as in England. The former of theſe fixed diviſors is more ſuſceptible of furniſhing a conſiderable number of other diviſors; and, as the intereſt in the countries, or places, above mentioned is very ſubject to variation, it is much more convenient than the diviſor 7300. Thus, if it were required to find a diviſor appertaining to intereſt at 6 per cent, we ſhould ſtate the following proportion:

$$6 : 5 :: 7200 : x;$$

and by applying the ſame method to other rates of intereſt, in order to obtain their reſpective diviſors, we ſhould find the following:

At 2 per cent -	18000	At 8 per cent -	4500
3 - - - -	12000	9 - - - -	4000
4 - - - -	9000	10 - - - -	3600
6 - - - -	6000	12 - - - -	3000

And many others in ſimilar proportions.

OF DISCOUNT.

Diſcount is a deduction from the amount of a bill of exchange, or of a debt, for a greater or leſs anticipation of payment.

The diſcount upon the amount of a bill is calculated in the ſame way as intereſt; that is, by multiplying the principal by the number of days, and dividing the product by the fixed number 7300, when the reſult is deducted from the amount of ſuch bill.

The diſcount upon the amount of an anticipated payment is calculated like commiſſion; that is, by multiplying the ſum upon which the diſcount is allowed by the rate of diſcount, and dividing the product by 100, when the reſult is deducted from the payment to be made.

OF
OPERATIONS
OF
EXCHANGE.

OF

OPERATIONS OF EXCHANGE.

EXCHANGES are of an univerſal uſe in commercial tranſactions with foreign countries, ſince, in order to purchaſe and import goods, to ſell and export the produce of our manufactures, it is abſolutely neceſſary to know how to remit, or how to draw, and what is the equivalent between ſterling and foreign money reſulting from the courſe of exchange.

When an exchange is quoted between two places, one of theſe places always gives a price determined to receive an undetermined one. The determined price is called *certain,* becauſe it is invariably the ſame: for example, London gives the certain price to France; that is to ſay, one pound ſterling to receive ſo many livres tournois, more or leſs. The undetermined price is called *uncertain,* becauſe it is always ſubject to variation: for inſtance, London gives the uncertain price to Spain; that is to ſay, ſo many pence ſterling, more or leſs, to receive a dollar of exchange.

Hence we may infer the two following principles. 1ſt, On a place to which London gives the certain price, a bill of exchange is to be drawn or negotiated at the loweſt courſe, and to be taken at the higheſt.

For it is evident, that, if the exchange between London and Paris be at 24 livres tournois per pound ſterling, it will be more advantageous to a merchant at London to draw upon Paris at 23 than at 24, and to

C 4

remit at 24 inſtead of 23; ſince, in drawing at 23, he will give only 23 livres to receive one pound, and in remitting at 24 he will receive 24 livres for the ſame value.

2dly, On a place to which London gives the uncertain price, a bill of exchange is to be drawn or negotiated at the higheſt courſe, and to be taken at the loweſt.

In fact, if the exchange between London and Madrid be at 35 pence ſterling per dollar of exchange, it will be more advantageous to a merchant at London to draw at 36 than at 35, and to remit at 35 inſtead of 36; ſince, in drawing at 36, he will receive 36 pence for one dollar, and in remitting at 35 he will give only 35 pence to receive a dollar.

When bills are drawn at *uſances*, the extent of ſuch terms is determined by the cuſtom of each place where the bills are payable.

Days of grace are a certain number of days granted for the payment of bills after the abſolute term of payment is expired.

The word *agio* ſignifies the difference between bank money and current money: it alſo means, in thoſe cities where foreign coins are current, the difference between the actual value of ſuch coins and that at which they may have been fixed by the government.

Exchanges are either direct, indirect, or proportional. They are *direct*, when a place draws upon or remits to another, with which it has an exchange open; thus, when London draws upon or remits to Hamburgh, the exchange is direct, ſince London has an exchange open with Hamburgh.

Exchanges are *indirect,* when there is not any exchange eſtabliſhed between two tranſacting places, and that the one is obliged, both in drawing upon, and in remitting to, the other, to make uſe of an intermediate place. For inſtance, London has not any exchange open with Vienna, and is conſequently obliged, either in drawing or remitting to Vienna, to make uſe of Hamburgh, or of ſome other intermediate place with which London has a direct exchange.

Exchanges are *proportional,* when they reſult from the compariſon of known exchanges. For inſtance, if the exchange of London upon Liſbon and of Liſbon upon Hamburgh were known, we ſhould be able, by the compariſon of thoſe two exchanges, to find a third between London and Hamburgh which would be in proportion to the two firſt; and it is for the purpoſe of aſcertaining theſe proportional exchanges, that arbitrations of exchange have been invented.

There are two pars of exchange.

The firſt is the *intrinſic par,* reſulting from the compariſon of the weight, ſtandard, and current value of the monies of one country with thoſe of another. For inſtance, if we compare only the weight and ſtandard of a foreign gold coin, ſuch as the "*meya dobra*" with the ſterling weight, ſtandard, and value of a guinea, we find that the meya dobra, of which the value is fixed in Portugal at 6400 reis, is equivalent with 36 ſhillings or 432 pence ſterling; and it is this which is called the *par of coins.* Thus the par of coins being found, it is eaſy to deduce from it the par of exchange; for, to obtain that between London and Liſbon, it is only requiſite to ſtate the following proportion :

Foreign value Engliſh value Certain price
6400 reis : 432 pence : : 1000 reis : x

Whence it ariſes that the par of exchange between London and Liſbon reſulting from the compariſon of their reſpective gold coins is 67½ pence ſterling per milreis.

But, as it is known that the gold and ſilver coinage of moſt countries have not the ſame reſpective value, it follows that the proportion between gold and ſilver in one country is ſeldom the ſame as in another, and conſequently that the par of exchange reſulting from the compariſon of the ſilver monies is almoſt always different from the par reſulting from the compariſon of the monies in gold; ſo that the intrinſic par is generally determined by the average reſult of the two other pars.

The ſecond par may be called *eventual.*

It often happens that a place, inſtead of exchanging by caſh, exchanges by an imaginary money. Thus, Amſterdam exchanges with London by florins banco; and, as there is a difference between bank money and current money which is determinable by the agio that may be quoted, it is evident, that, when this agio varies, the value of the florins banco alſo varies, and with it the par of exchange between Amſterdam and London. Again: governments are not unfrequently obliged by political events to create a paper currency of fictitious value, the circulation of which is more or leſs enforced, and conſequently more or leſs extenſive. For inſtance, in the courſe of laſt war the government of Portugal created a paper currency, "*papel moeda*", and ordered that half of every payment to be made in that kingdom ſhould be in caſh, and the remainder in paper money.

This new combination of currency was entitled legal money, "*moeda legal*"; but, as it was partly fictitious, it could not long remain at the par of the former currency in caſh; and hence, when the paper money is to be reduced into effective, a loſs is incurred of a diſcount, more or leſs conſiderable, according to circumſtances. When, therefore, the diſcount is at 10 per cent, there is a defalcation of 5 per cent from the ſum to be paid for a bill drawn from London upon Liſbon; ſuch payment being made in legal money. It is conſequently evident that the par of 67½, deduced from the above compariſon of the gold coins, muſt vary in the ſame proportion as the diſcount on the paper money in queſtion. We may therefore conclude, that we cannot accurately eſtabliſh any commercial operations, or calculate *tables of arbitrations* upon the principle of the conſideration of exchanges as *above or below par*.

There are ſeveral rules for the calculation of exchanges.

Let us ſelect a ſimple operation which will be eaſily underſtood.

PROPOSITION.

Reduce 2400 livres tournois into pounds ſterling at the exchange of 24 livres tournois per pound ſterling.

CALCULATION BY THE RULE OF PROPORTION, OR RULE OF THREE.

It will be perceived, that 24 livres and 1 pound become the two firſt terms of a direct and ſimple proportion, and that 2400 livres, which is the ſum to be reduced, or the third term, will contain the fourth term of the proportion as often as 24 contain 1, that is, 24 times. Thus, by repreſenting this fourth term by x, we have the following proportion, 24 livres : 1 pound :: 2400 livres : x;

whence we muſt find the value of x, or the fourth term, by multiplying the two means by each other, and dividing their product by the firſt extreme: the reſult will be,

24 livres : 1 pound :: 2400 livres : 100 pounds.

In fact, the fourth term is of that proportionate value, ſince 100 are contained 24 times in 2400: on the other hand, it is no leſs evident that theſe terms are in proportion to each other, ſince the product of the extremes is equal to the product of the means;

$$\overset{\text{Extremes}}{\text{for } 24 \times 100} = \overset{\text{Means}}{1 \times 2400.}$$

We ſhall hence conclude, that, in the calculation of an exchange by the rule of proportion, the third term is always the ſum to be reduced, and the fourth term the ſum given in exchange. In ſimple proportion, the firſt term is of the ſame kind as the third, and the ſecond of the ſame kind as the fourth; but in compound proportion the firſt of the firſt terms is of the ſame kind as the third, and the laſt of the ſecond terms of the ſame kind as the fourth.

CALCULATION BY THE RULE OF EQUATION.

We have juſt ſeen, that, by placing in equation the reſpective products of the extremes and of the means, the form of an equation may be given to every proportion: in fact, in order to verify, in the above mentioned propoſition, that the product of the extremes was equal to the product of the means, we naturally proceeded to the following multiplications:

$$\begin{array}{rr} 100 & 2400 \\ 24 & 1 \\ \hline 2400 & 2400 \end{array}$$

But, as in every proportion we may always multiply the third term by the ſecond, to divide the product by the firſt, repreſenting the fourth term by x, it is evident that the proportion 24 : 1 :: 2400 : x may be thus ſtated:

$$\begin{array}{rcl} & 2400 : x \\ 24 : & 1 \end{array}$$

Now, if we conſider that 24 livres are equivalent with 1 pound, ſince 24 livres are given in exchange for 1 pound, and that 2400 livres, which are the ſum to be reduced, muſt be equivalent with x, ſince x repreſents the ſum given in exchange, we ſhall perceive that we may ſubſtitute to the ſign :, which indicates proportion, and means *is to,* that of =, which points out equation, and ſignifies *is equal.* By ſubſtituting ſuch ſigns, we change the proportion into an equation, as follows:

$$\begin{array}{rcl} & & 2400 \text{ livres} = x \\ 24 \text{ livres} = & & 1 \text{ pound}; \end{array}$$

which is called, in mathematics, *to ſubſtitute to proportions their correſponding equations.*

If calculations of exchange were confined to ſimple and direct rules of proportion, it would be quite unneceſſary to uſe the mode of ſubſtitution; but as theſe operations are often very complicated, I have myſelf always adopted the mode in queſtion, in order to ſimplify the operations by compriſing the three firſt terms of the proportions in two columns, of which one becomes the dividend and the other the diviſor. It may be alſo obſerved, that, by this means, a habit will be acquired of ſtating the rule of equation, upon which all the calculations of buſineſs are founded.

Let us now proceed to a more difficult operation.

PROPOSITION.

Reduce 4081 *florins* 4 *ſtivers banco into pounds ſterling at the exchange of* 38 *ſhillings Flemiſh banco per pound ſterling.*

In this operation, there are three ſorts of money; that is, florins banco, pounds ſterling, and ſhillings Flemiſh banco. The ſhillings Flemiſh are an imaginary money uſed at Amſterdam and Hamburgh in exchanges, and in the purchaſe of certain goods. Thus, as Amſterdam exchanges with London by this money, it is, in the firſt place, neceſſary to reduce the florins banco into ſhillings Flemiſh, and afterwards the ſhillings Flemiſh into pounds ſterling.

We have already ſeen that the ſum to be reduced is conſtantly the third term of the proportion, which, in the correſponding equation, becomes the firſt term of the dividend: therefore, in order to reſolve the preceding propoſition, and beginning the formation of the column of the dividend by the ſum to be reduced, that is, by 4081 4, I place on the right its equivalent repreſented by x, in the following manner:

$$4081 \quad 4 = x.$$

Then I obſerve that the firſt term of the proportion, or the firſt term of the diviſor, muſt always be of the ſame kind as the third term of the proportion, that is, as the firſt term of the dividend: thus, as the firſt term of the dividend is in florins, I conclude that the firſt term of the diviſor muſt alſo be compoſed of florins; but as thoſe florins are to be reduced into ſhillings Flemiſh, I refer to the table of Amſterdam for the proportion between theſe two monies, and find that 3 florins are equivalent with 10 ſhillings Flemiſh; wherefore I place 3 florins as the firſt term of the diviſor, at the ſame time that I place its equivalent as the ſecond term of the dividend, in the following manner :

4081 4 = x
3 florins = 10 ſhillings Flemiſh.

It is evident, that, by the mere poſition of theſe two numbers 3 and 10, I have reduced the florins into ſhillings Flemiſh, ſince if we were to multiply 4081 4 by 10, and divide the product 40812 by 3, we ſhould find the reſult to be 13604 ſhillings Flemiſh, and this would in fact be the proceſs which might be followed ; but it would, in this caſe, be indiſpenſible to make another operation to reduce 13604 ſhillings Flemiſh into pounds ſterling : in order, therefore, to abridge, the two operations are united into one, whence is derived the term of *rule of conjunction,* which I have thought it inexpedient to adopt, as my calculations are founded upon the theory of equations.

Proceeding, therefore, and having ſhillings Flemiſh to reduce into pounds ſterling, the exchange itſelf points out to me that 38 ſhillings Flemiſh are equivalent with 1 pound ſterling : hence, I place 38 as the ſecond term of the diviſor, and 1 as the third term of the dividend, in the following manner :

4081 4 = x
3 florins = 10 ſhillings Flemiſh
38 ſhill. Flem. = 1 pound ſterling.

In fact, it is evident that 38 ſhould be placed in the column of the diviſor, ſince, if I had made the two operations ſeparately, I ſhould have divided the reſult of the firſt, that is, 13604, by 38, which would have given a ſecond reſult of 358, or the ſame which we are about to obtain, by a ſingle operation.

In compound proportion, the laſt of the ſecond terms being always of the ſame kind as the fourth, I perceive, that, in the above equation, 1 pound ſterling, which is the laſt of the ſecond terms of the proportion, or the laſt term of the dividend of the equation, is of the ſame kind as the fourth term of the proportion, or the reſult of the equation; that is, as the ſum to be given in exchange: on the other hand, the object of the operation being to reduce florins banco into pounds ſterling, as I have obtained 1 pound ſterling for the laſt term of the dividend, I conclude that I have not any thing farther to do than to make the operations as ſtated, that is, to multiply all the terms of the diviſor by each other, to multiply in the ſame manner all the terms of the dividend by each other, and to divide the product of the ſecond column by the product of the firſt, when the quotient will be the amount of the ſum given in exchange.

Realizing, therefore, theſe operations, I find the reſult to be 358, demonſtrating, that, if I take a bill of exchange upon Amſterdam for 4081 florins 4 ſtivers banco, at the exchange of 38 ſhillings Flemiſh banco for 1 pound ſterling, I muſt pay 358 pounds ſterling. Thus, the value of x being found, I have conſequently the following equation:

$$\begin{array}{rcl} 4081\ 4 & = & 358 \\ 3 & = & 10 \\ 38 & = & 1 \end{array}$$

Now, if I wiſh to verify the accuracy of the operation, that is to ſay, to aſcertain whether the product of the extremes be equal to the product of the means, I ſee that the dividend compriſes the means; and therefore I transfer 358, which was the unknown extreme, to the diviſor compriſing the terms of the known extreme, and, multiplying the terms of both columns by each other, I find that the operation is correct, ſince the products are equal.

358		4081 4
3		10
38		1
40812	=	40812

This operation may alſo be proved in another manner by an inverſe operation.

In fact, ſince by the reduction of 4081 florins 4 ſtivers banco into pounds ſterling at the exchange of 38 ſhillings Flemiſh we have obtained for reſult 358 pounds, we muſt neceſſarily reproduce the former ſum by reducing 358 pounds ſterling into florins and ſtivers banco at the ſame exchange; whence, if we had had to reduce 358 pounds ſterling into florins and ſtivers banco, it would have been neceſſary to have placed 358 as the firſt term of the dividend; and, by following the ſame reaſoning, and making the ſame operations, the reſult would have been the following equation:

358 = 4081 4
1 pound ſterl. = 38 ſhillings Flemiſh
10 ſhill. Flem. = 3 florins banco,

and, by tranſpoſing ſuch reſult, the products would have been found to be equal,

4081 4		358
1		38
10		3
40812	=	40812

The proceedings obſerved in the two propoſitions above mentioned, being founded upon principles which are applicable to every caſe of the ſame nature, lead to this general rule.

TO FIND THE EQUATION.

Always place the ſum to be reduced as the firſt term of the dividend. Let each term of the diviſor be of the ſame kind as the term immediately preceding in the dividend, and place oppoſite to each its equivalent. Obſerve that the laſt term of the dividend muſt always be of the ſame kind as the ſum given in exchange.

TO RESOLVE THE EQUATION.

Multiply all the terms of the dividend and all the terms of the diviſor by each other reſpectively, and divide the firſt product by the ſecond.

TO PROVE THE EQUATION.

Verify whether the product of the diviſor by the reſult of the equation be equal to the product of the dividend; or, ſtate an inverſe equation, of which the reſult muſt be equal to the firſt term of the dividend of the former equation.

Agreeably with theſe general principles, I have placed, after each propoſition, the equation reſulting from its examination; and it is from ſuch equations that I have deduced the rule to be followed for the ſolution of each operation.

OF FIXED NUMBERS.

Fixed numbers, which will be occaſionally mentioned, are formed in three ways.

1ſt, By the product of the multiplication of two or more numbers, which always appertain to certain operations, and are therefore invariable in thoſe operations. See Hamburgh on France, &c.

2dly, By the reſult of a ſimilar multiplication after the ſuppreſſion of two equivalent numbers from each of the members of the equation. See Augſburgh on Hamburgh, &c.

3dly, By the reſult of an exact diviſion of invariable numbers. See Sicily on Naples.

OF THE COMMERCIAL APPLICATION OF FRACTIONS.

The object of mathematics is that of conſidering every ſort of calculation under general points of view, and conſequently of furniſhing rules applicable to every caſe; but it often happens in practice, that particular rules, more applicable to certain operations, and tending to abridge them, are ſubſtituted to the general rules of the ſcience. Hence it is, that familiarity with the particular rules effaces, after a time, the recollection of the general rules, notwithſtanding that the latter be occaſionally neceſſary to ſolve thoſe problems which are not within the compaſs of the particular rules which have ſucceeded them.

The truth of this aſſertion is principally obſervable in fractional calculations. In the treatiſes upon Arithmetic, general rules are given for the different operations of which fractions are ſuſceptible; but, in practice, thoſe rules are more or leſs modified, and very different methods have even been adopted for the multiplication and diviſion of fractional numbers. The prevalence of the methods alluded to has been ſuch, that the general rules may be ſaid to have been totally forgotten; whence it ariſes, that, in calculations involving any fractional numbers to which the rules of practice are not applicable, conſiderable embarraſſment is ſometimes experienced.

The principal object in the compoſition of this part of my work being that of facilitating the calculation of exchanges in accompting houſes, I have adopted, in the ſolution of thoſe operations, the methods of which I have ſpoken; and, in order to point out how much they differ from the general rules, I ſhall give two examples of the reſpective calculations.

OF MULTIPLICATION OF FRACTIONAL NUMBERS.

Required to multiply 567*l* 12*s* 6*d by* $46\frac{1}{4}$.

By the general rule we ſhould proceed as follows:

1ſt, Reduce each of the whole numbers into a fraction of the ſame denomination as the loweſt fractional part annexed to the whole numbers; that is, $46\frac{1}{4}$ into fourths, and 567*l* 12*s* 6*d* into pence to be taken as the numerator of a fraction of which 240, or the number of pence in a pound, would be the denominator.

2dly, Multiply the numerators and the denominators by each other reſpectively.

3dly, Divide the product of the numerators by the product of the denominators; the whole according to the following example:

$$46\frac{1}{4} = \frac{185}{4} \qquad 567\ 12\ 6 = \frac{136230}{240}$$

$$\frac{185}{4} \times \frac{136230}{240} = \frac{25202550}{960}$$

$$\frac{25202550}{960} = 26252l\ 13s\ 1\frac{1}{2}d \text{ reſult.}$$

To this operation by the general rule, which is evidently long and tedious, the following is ſubſtituted:

	567	12	6
	46¼		
	3402		
	2268		
for ¼ - -	141	15	
for ½ - -	23	2	6
for ⅛ - -	5	15	7½
	26252*l*	13*s*	1½*d* reſult.

In this operation, I have firſt inter-multiplied the whole numbers. I have then taken a proportional part of the whole numbers of the multiplicand for the fraction ¼, that is, a fourth; and as the fraction 12 6 is equivalent with ⅝ of a pound, I have taken for $\frac{4}{8}$ or ½ a proportional part of the multiplier, that is, the half of 46¼, and, for the remaining ⅛, another proportional part, that is, an eighth of 46¼, or the fourth of the half obtained for $\frac{4}{8}$.

OF DIVISION OF FRACTIONAL NUMBERS.

Required to divide 26252*l* 13*s* 1½*d by* 46¼.

By adopting the general rule, it is expedient,

1ſt, To reduce each of the whole numbers into a fraction of the ſame denomination as the loweſt of the fractional parts annexed to the whole numbers, that is, 46¼ into fourths, and 26252*l* 13*s* 1½*d* into half-pence to be taken as the numerator of a fraction of which 480, or the number of half-pence in a pound, will be the denominator.

2dly, To reverſe the dividing fraction.

3dly, To inter-multiply the numerators and the denominators reſpectively.

4thly, To divide the product of the numerators by the product of the denominators; the whole as follows:

$$46\tfrac{1}{4} = \frac{185}{4} \qquad 26252l\ 13s\ 1\tfrac{1}{2}d = \frac{12601275}{480}$$

$$\frac{4}{185} \times \frac{12601275}{480} = \frac{50405100}{88800}$$

$$\frac{50405100}{88800} = 567l\ 12s\ 6d \text{ reſult.}$$

To the foregoing operation the following is ſubſtituted:

46¼   26252 13 1½
4 fraction   4 fraction

185 diviſor   185)105010 12 6(567 12 6 reſult.
1251
1410
115
20

2312
462
92
12

190
92

1110
0

This calculation is performed by removing the denominator of the fraction annexed to the diviſor, which is effected by multiplying the diviſor and the dividend by the denominator of that fraction, and by adding to the product of the diviſor the numerator of the ſame fraction. In reſpect to the diviſion, the operation is upon the ſame principle as that which is explained in the calculation of tare, under the head of different calculations.

Hence we may conclude, that, for the multiplication of numbers partly fractional, we muſt take parts of the whole numbers proportional to the fractions annexed to them; and that for the diviſion of fractional numbers it is only requiſite to remove the denominator of the fraction annexed to the diviſor. If, after ſuch operation, there ſhould be a fraction annexed to the whole numbers of the dividend, it is ſimply neceſſary to add that fraction to the product of the remainder of the diviſion by the ſeveral ſubdiviſions of unity. When the operations propoſed cannot be performed with facility by the rules of practice in queſtion, recourſe ſhould then be had to the general rules.

LONDON.

Monies of Exchange, and Regulations.

A pound = 20 ſhillings, or 240 pence.
A ſhilling = 12 pence, or 48 farthings.

Accounts are kept in pounds, ſhillings, and pence: ſome reckon farthings.

Value of uſances for bills drawn from
France, Hamburgh, and Holland, 1 month after date.
Portugal and Spain..............2 months after date.
Italy...........................3 months after date.

There are three days of grace, which begin the day after the bills are due, and on the third day they muſt be paid or proteſted. Bills due on Sunday muſt be paid or proteſted on Saturday: for thoſe at ſight, no days of grace are allowed.

LONDON.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Amſterdam	*giv.*	37 ſhillings Flemiſh	*for*	1 pound ſterling.
Dublin	*giv.*	110½ pounds Iriſh	*for*	100 pounds Britiſh.
France	*giv.*	25 livres tournois	*for*	1 pound ſterling.
Idem	*giv.*	25 francs	*for*	1 pound ſterling.
Genoa	*rec.*	46 pence ſterling	*for*	1 pezza fuori di banco.
Hamburgh	*giv.*	35 ſhillings Flemiſh	*for*	1 pound ſterling.
Leghorn	*rec.*	50 pence ſterling	*for*	1 pezza of 8 reals.
Naples	*rec.*	39 pence ſterling	*for*	1 ducat di regno.
Portugal	*rec.*	63½ pence ſterling	*for*	milreis.
Rotterdam	*giv.*	12 florins current	*for*	1 pound ſterling.
Spain	*rec.*	36 pence ſterling	*for*	1 dollar of exchange.
Venice	*giv.*	58 lire piccole	*for*	1 pound ſterling.

N. B. As Bordeaux and Bayonne exchange with London by francs, I have thought it expedient to include the calculation of this exchange, under the head of France.

LONDON ON AMSTERDAM.

Reduce 4086 florins 4 ſtivers 6 penings banco into pounds, ſhillings, and pence ſterling, at the exchange of 38 ſhillings 2 grotes Flemiſh banco per pound ſterling.

EQUATION.

4086 4 6 = x.

1 florin = 40 grotes

12 grotes = 1 ſhilling

38 ſhill. 2 grot. = 1 pound.

RULE.

Multiply 4086 4 6 by 40 grotes; divide the product by 38·2, price of exchange, and by 12 grotes.

38 2 — 4086 4 6

12 — 40

458 div. — 163440

for 4 ſtivers - 8

for 6 penings - $\frac{3}{4}$

458)163448 $\frac{3}{4}$(356 17 6 reſult.

2604

3148

400

20

8015

3435

229

12

458

229

2748

0

See the proof of this operation, page 56.

N. B. When the price of exchange conſiſts of ſhillings Flemiſh only, multiply the ſum by 10 inſtead of 40, and multiply the price of exchange by 3 inſtead of 12.

LONDON ON DUBLIN.

Reduce 293 pounds 10 ſhillings 6 pence Iriſh into pounds, ſhillings, and pence Britiſh, at the exchange of 14 per cent.

EQUATION.

293 10 6 = x
114*l* Iriſh = 100*l* Britiſh.

RULE.

Multiply 293 10 6 by 100, and divide the product by 114, price of exchange.

293 10 6
100

29300
for 10 ſhillings 50
for 6 pence - 2 10

114)29352 10(257 9 6 reſult.
655
852
54
20

1090
64
12

128
64

768
84

To prove this operation, that is, to calculate the exchange of Dublin on London, multiply 257 9 6 by 114, price of exchange, and divide the product by 100.

N. B. Britiſh money is $8\frac{1}{3}$ per cent better than the Iriſh; therefore

12pound s Britiſh = 13 pounds Iriſh.

LONDON ON FRANCE.

Reduce 3222 livres 2 ſols 9 deniers tournois into pounds, ſhillings, and pence ſterling, at the exchange of 25 livres 14 ſols tournois per pound ſterling.

EQUATION.

3222 2 9 = x
25 liv. 14 ſols = 1 pound.

RULE.

Divide 3222 2 9 by 25 14, price of exchange.

25 14	3222 2 9
20 fraction	20 fraction
514 div.	514)64442 15(125 7 6 reſult.
	1304
	2762
	192
	20
	3855
	257
	12
	514
	257
	3084
	0

See the proof of this operation, page 101.

LONDON ON FRANCE.

Reduce 2545 francs 41 cents into pounds, ſhillings, and pence ſterling, at the exchange of 24 francs 80 cents per pound ſterling.

EQUATION.

```
                          2545 41 = x
24 francs 80 cents =         1 pound.
```

RULE.

Divide 2545 41 by 24 80, price of exchange.

```
2480)254541(102 12 9 reſult.
         6541
         1581
           20
       ------
        31620
         6820
         1860
           12
         ----
         3720
        1860
       ------
        22320
            0
```

See the proof of this operation, page 102.

LONDON ON GENOA.

Reduce 1277 pezze 13 ſoldi 4 denari fuori di banco into pounds, ſhillings, and pence ſterling, at the exchange of 45 pence ſterling per pezza of 115 ſoldi fuori di banco.

EQUATION.

1277 13 4 = x
1 pezza = 45 pence
240 pence = 1 pound.

RULE.

Multiply 1277 13 4 by 45, price of exchange, and divide the product by 240 pence.

1277 13 4
45

6385
5108
for 10 ſoldi - 22 10
for 3 do. 4 denari 7 10

12)57495

20) 4791 3

239 11 3 reſult.

See the proof of this operation, page 122.

LONDON ON HAMBURGH.

Reduce 1416 marcs 1 ſhilling 6 fenings lubs banco into pounds, ſhillings, and pence ſterling, at the exchange of 35 ſhillings 4 grotes Flemiſh banco per pound ſterling.

EQUATION.

1416 1 6 = x
1 marc = 32 grotes
12 grotes = 1 ſhilling
35 ſhill. 4 grot. = 1 pound.

RULE.

Multiply 1416 1 6 by 32 grotes; divide the product by 35 4, price of exchange, and by 12 grotes.

35 4 1416 1 6
12 32
424 div. 2832
4248
for 1 ſhilling - 2
for 6 fenings - 1

424)45315(106 17 6 reſult.
2915
371
20
7420
3180
212
12
424
212
2544
0

See the proof of this operation, page 134.

N. B. When the price of exchange conſiſts of ſhillings Flemiſh only, multiply the ſum by 8 inſtead of 32, and multiply the price of exchange by 3 inſtead of 12.

LONDON ON LEGHORN.

Reduce 664 pezze 7 ſoldi 6 denari of 8 reals into pounds, ſhillings, and pence ſterling, at the exchange of 48 pence ſterling per pezza of 8 reals.

EQUATION.

$$664\ 7\ 6 = x$$

$$1 \text{ pezza} = 48 \text{ pence}$$

$$240 \text{ pence} = 1 \text{ pound.}$$

RULE.

Multiply 664 7 6 by 48, price of exchange, and divide the product by 240 pence.

```
                        664  7 6
                         48
                        --------
                        5312
                       2656
for 5 ſoldi   -   -      12
for 2 do. 6 den.          6
                     -------
                   12)31890
                     -------
                   20) 2657  6
                      --------
                        132 17 6 reſult.
```

See the proof of this operation, page 145.

LONDON ON NAPLES.

Reduce 1014 ducats 16 grains di regno into pounds, ſhillings, and pence ſterling, at the exchange of 37½ pence ſterling per ducat di regno.

EQUATION.

1014 16 = x
1 ducat = 37½ pence
240 pence = 1 pound.

RULE.

Multiply 1014 16 by 37½, price of exchange, and divide the product by 240 pence.

1014 16
37½

7098
3042
for ½ - - - - 507
for 16 grains - 6

12)38031

20) 3169 3

158 9 3 reſult.

See the proof of this operation, page 164.

LONDON ON PORTUGAL.

Reduce 566880 reis into pounds, ſhillings, and pence ſterling, at the exchange of 62½ pence per mil reis.

EQUATION.

566880 = x
1000 reis = 62½ pence
240 pence = 1 pound.

RULE.

Multiply 566880 by 62½, price of exchange; divide the product by 1000 reis, and the quotient by 240 pence.

566880
62½
1133760
3401280
for ½ - - - 283440
1,000)35430,000
12)35430
20) 2952 6
147 12 6 reſult.

See the proof of this operation, page 173.

N. B. To divide the product by 1000, ſeparate the three right hand figures; and when they are or exceed 500, add 1 unit.

LONDON ON ROTTERDAM.

Reduce 2401 florins 17 ſtivers 8 penings current into pounds, ſhillings, and pence ſterling, at the exchange of 12 florins 4 ſtivers current per pound ſterling.

EQUATION.

2401 17 8 = x
12 florins 4 ſtivers = 1 pound.

RULE.

Divide 2401 17 8 by 12 4, price of exchange.

12 4	2401 17 8
20 fraction	20 fraction
244 div.	244)48037½(196 17 6 reſult.

2363
1677
213
20

4270
1830
122
12

244
122

1464
0

See the proof of this operation, page 57.

LONDON ON SPAIN.

Reduce 2643 dollars 6 reals 17 maravedis of plate into pounds, ſhillings, and pence ſterling, at the exchange of 35½ pence ſterling per dollar of exchange.

EQUATION.

2643 6 17 = x
1 dollar = 35½ pence
240 pence = 1 pound.

RULE.

Multiply 2643 6 17 by 35½, price of exchange, and divide the product by 240 pence.

2643 6 17
35½

13215
7929

for ½ - - -	1321 4
for 4 reals - -	17 6
for 2 ditto - -	8 7
for 17 maravedis	2 1 25½

12)93855 2 25½

20) 7821 3

391 1 3 reſult.

See the proof of this operation, page 196.

LONDON ON VENICE.

Reduce 14783 lire 3 ſoldi 9 denari piccole into pounds, ſhillings, and pence ſterling, at the exchange of 59 lire piccole effective per pound ſterling.

EQUATION.

14783 3 9 = x

59 lire = 1 pound.

RULE.

Divide 14783 3 9 by 59, price of exchange.

```
59)14783 3 9(250 11 3 reſult.
     298
      33
      20
     ---
     663
      73
      14
      12
     ---
      37
     14
     ---
     177
       0
```

See the proof of this operation, page 228.

AMSTERDAM AND HOLLAND.

Monies of Exchange, and Regulations.

A rixdollar *(Rixdalder)* = $2\frac{1}{2}$ florins = 50 ſtivers = $8\frac{1}{3}$ ſhillings Flemiſh or 100 grotes Flemiſh.

A florin or guilder *(Gulden)* = 20 ſtivers = $3\frac{1}{3}$ ſhillings Flemiſh or 40 grotes Flemiſh.

A ſtiver *(Stuyver)* = 16 penings or 2 grotes Flemiſh.

A pound Flemiſh *(Pond Flaams)* = 20 ſhillings Flemiſh = 240 grotes Flemiſh or 6 florins.

A ſhilling Flemiſh *(Schilling Flaams)* = 12 grotes Flemiſh or 6 ſtivers.

A grote Flemiſh *(Groot Flaams)* = $\frac{1}{2}$ ſtiver or 8 penings.

2 rixdollars = 5 florins.
3 rixdollars = 25 ſhillings Flemiſh.
3 florins = 10 ſhillings Flemiſh.

Accounts are kept in florins, ſtivers, and penings.

Value of uſances for bills drawn from

England and France........	1 month after date.
Italy, Portugal, and Spain....	2 months after date.
Dantzic and Konigſberg....	40 a 70 days after date.
Germany and Switzerland...	14 days after ſight.

There are 6 days of grace, Sundays and holidays included, for bills of exchange drawn in current money; but for thoſe drawn in bank money, no days of grace are generally allowed, and bills are proteſted on the ſecond or third day after they become due.

AMSTERDAM AND HOLLAND.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	37 ſhillings Flemiſh	*for*	1 pound ſterling.
Idem	*rec.*	12 florins current	*for*	1 pound ſterling.
Breſlaw	*rec.*	44 ſtivers banco	*for*	1 libra banco.
Dantzic	*rec.*	1 pound Flemiſh	*for*	372 groſhen current.
France	*rec.*	54 grotes Flemiſh	*for*	3 francs.
Francfort	*giv.*	139 rixdollars	*for*	100 rixdollars current.
Geneva	*rec.*	90 grotes Flemiſh	*for*	1 crown current.
Genoa	*rec.*	83 grotes Flemiſh	*for*	1 pezza fuori di banco.
Hamburgh	*rec.*	33 ſtivers banco	*for*	1 marc lubs banco.
Idem	*rec.*	106 florins current	*for*	120 marcs lubs banco.
Leghorn	*rec.*	88 grotes Flemiſh	*for*	1 pezza of 8 reals.
Portugal	*rec.*	44 grotes Flemiſh	*for*	1 cruſade of 400 reis.
Spain	*rec.*	89 grotes Flemiſh	*for*	1 ducat of exchange.
Venice	*giv.*	4 lire 18 ſoldi	*for*	1 florin banco.
Vienna	*rec.*	25 ſtivers banco	*for*	1 rixdollar current.

AMSTERDAM ON LONDON.

Reduce 356 pounds 17 ſhillings 6 pence ſterling into florins, ſtivers, and penings banco, at the exchange of 38 ſhillings 2 grotes Flemiſh banco per pound ſterling.

EQUATION.

356 17 6 = x
1 pound = 38 ſhill. 2 grotes
1 ſhilling = 12 grotes
40 grotes = 1 florin.

RULE.

Multiply 356 17 6 by 38 2, price of exchange, and by 12 grotes; divide the product by 40 grotes.

356 17 6
38 2 × 12 = 458

2848
1780
1424
for 10 ſhillings - 229
for 5 ditto - - 114 10
for 2 do. 6 pence 57 5

40)163448 15(4086 4 6 reſult.
344
248
8
20

175
15
16

90
15

240
0

See the proof of this operation, page 42.

N. B. When the price of exchange conſiſts of ſhillings Flemiſh only, multiply the price of exchange by 3 inſtead of 12, and divide the product by 10 inſtead of 40.

AMSTERDAM AND ROTTERDAM ON LONDON.

Reduce 196 pounds 17 ſhillings 6 pence ſterling into florins, ſtivers, and penings current, at the exchange of 12 florins 4 ſtivers current per pound ſterling.

EQUATION.

196 17 6 = x

1 pound = 12 florins 4 ſtivers.

RULE.

Multiply 196 17 6 by 12 4, price of exchange.

	196	17	6
	12	4	
	392		
	196		
for 4 ſtivers -	39	4	
for 10 ſhillings	6	2	
for 5 ditto - -	3	1	
for 2 do. 6 pence	1	10	8
	2401	17	8 reſult.

See the proof of this operation, page 51.

AMSTERDAM ON FRANCE.

Reduce 1056 francs 75 cents into florins, ſtivers, and penings banco, at the exchange of 54 grotes Flemiſh banco for 3 francs.

EQUATION.

1056 75 = x

3 francs = 54 grotes

40 grotes = 1 florin.

RULE.

Multiply 1056 75 by 54, price of exchange, and divide the product by 120, fixed number.

1056 75

54

4224

5280

for 50 cents - 27

for 25 cents - 13½

---

120)57064½(475 10 12 reſult.

906

664

64

20

1290

90

16

540

90

1440

240

0

See the proof of this operation, page 103.

AMSTERDAM ON GENOA.

Reduce 572 pezze fuori di banco into florins and ſtivers banco, at the exchange of 85 grotes Flemiſh banco per pezza of 115 ſoldi fuori di banco.

EQUATION.

572 = x
1 pezza = 85 grotes
40 grotes = 1 florin.

RULE.

Multiply 572 by 85 grotes, and divide the product by 40 grotes.

572
85
————
2860
4576
————
40)48620(1215 10 reſult.
86
62
220
20
20
————
400
0

See the proof of this operation, page 123.

AMSTERDAM ON HAMBURGH.

Reduce 3746 marcs 5 ſhillings 4 fenings lubs banco into florins, ſtivers, and penings banco, at the exchange of 34½ ſtivers banco for 2 marcs lubs banco.

EQUATION.

3746 5 4 = x
2 marcs = 34½ ſtivers
20 ſtivers = 1 florin.

RULE.

Multiply 3746 5 4 by 34½, price of exchange, and divide the product by 40, fixed number.

	3746 5 4
	34½
	14984
	11238
for ½ - - -	1873
for 4 ſhillings	8 10
for 1 ſhilling	2 2 6
for 4 fenings	11 6

40)129248½(3231 4 4 reſult.
92
124
48
8
20
170
10
16
160
0

See the proof of this operation, page 135.

AMSTERDAM ON HAMBURGH.

Reduce 2854 marcs 8 ſhillings lubs banco into florins, ſtivers, and penings current, at the exchange of 106 florins current for 120 marcs lubs banco.

EQUATION.

2854 8 = x
120 marcs = 106 florins.

RULE.

Multiply 2854 8 by 106, price of exchange, and divide the product by 120 marcs.

2854 8
106

17124
28540
for 8 ſhillings 53

120)302577(2521 9 8 reſult.
625
257
177
57
20

1140
60
16

960
0

See the proof of this operation, page 136.

AMSTERDAM ON LEGHORN.

Reduce 675 pezze 17 ſoldi 6 denari of 8 reals into florins, ſtivers, and penings banco, at the exchange of 88 grotes Flemiſh banco per pezza of 8 reals.

EQUATION.

675 17 6 = x
1 pezza = 88 grotes
40 grotes = 1 florin.

RULE.

Multiply 675 17 6 by 88, price of exchange, and divide the product by 40 grotes.

675 17 6
88

5400
5400
for 10 ſoldi 44
for 5 ditto 22
for 2 do. 6 den. 11

40)59477(1486 18 8 reſult.
194
347
277
37
20
740
340
20
16
320
0

See the proof of this operation, page 146.

AMSTERDAM ON PORTUGAL.

Reduce 669 cruſades 200 reis into florins, ſtivers, and penings banco, at the exchange of 45 grotes Flemiſh banco per cruſade of 400 reis.

EQUATION.

669 200 = x
1 cruſade = 45 grotes
40 grotes = 1 florin.

RULE.

Multiply 669 200 by 45, price of exchange, and divide the product by 40 grotes.

669 200
45

3345
2676
for 200 reis - 22½

40)30127½(753 3 12 reſult.
212
127
7
20

150
30
16

480
80
0

See the proof of this operation, page 174.

AMSTERDAM ON SPAIN.

Reduce 350 ducats 17 ſueldos 6 dineros of exchange into florins, ſtivers, and penings banco, at the exchange of 88 grotes Flemiſh banco per ducat of exchange.

EQUATION.

350 17 6 = x
1 ducat = 88 grotes
40 grotes = 1 florin.

RULE.

Multiply 350 17 6 by 88, price of exchange, and divide the product by 40 grotes.

350 17 6
88
2800
2800
for 10 ſueldos - 44
for 5 ditto - - 22
for 2 do. 6 dineros 11
40)30877(771. 18 6 reſult.
287
77
37
20
740
340
20
12
240
0

To prove this operation, multiply 771 18 6 by 40 grotes, and divide the product by 88, price of exchange.

AMSTERDAM ON VIENNA.

Reduce 784 guldens 30 cruitzers into florins, ſtivers, and penings banco, at the exchange of 25½ ſtivers banco per rixdollar.

EQUATION.

784 30 = x
1½ gulden = 1 rixdollar
1 rixdollar = 25½ ſtivers
20 ſtivers = 1 florin.

RULE.

Multiply 784 30 by 25½, price of exchange, and divide the product by 30, fixed number.

784 30
25½
3920
1568
for ½ - - - 392
for 30 cruitzers - 12¾
30)20004¾(666 16 8 reſult.
200
204
24
20
495
195
15
16
90
15
240
0

See the proof of this operation, page 237.

AMSTERDAM AND HOLLAND.

Reduction of florins banco into florins current.

Reduce 4596 florins 17 ſtivers 8 penings banco into florins, ſtivers, and penings current, at the agio of 4½ per cent.

EQUATION.

4596 17 8 = x

100 florins banco = 104½ florins current.

RULE.

Multiply 4596 17 8 by 104½, rate of the agio, and divide the product by 100.

	4596	17	8
	104½		
	18384		
	45960		
for ½ - - -	2298		
for 10 ſtivers -	52	5	
for 5 ditto -	26	2	8
for 2 do. 8 penings	13	1	4
	1,00)4803,73	8	12(4803 14 11 reſult.
	20		
	14,68		
	16		
	420		
	68		
	11,00		

See the proof of this operation in the following page.

AMSTERDAM AND HOLLAND.

Reduction of florins current into florins banco.

Reduce 4803 florins 14 ſtivers 11 penings current into florins, ſtivers, and penings banco, at the agio of $4\frac{1}{2}$ per cent.

EQUATION.

4803 14 11 = x
$104\frac{1}{2}$ florins current = 100 florins banco.

RULE.

Multiply 4803 14 11 by 100, and divide the product by $104\frac{1}{2}$, rate of the agio.

$104\frac{1}{2}$	4803 14 11
2 fraction	100
209 div.	480300
for 10 ſtivers -	50
for 4 ditto -	20
for 11 penings	3 8 12
	480373 8 12
	2 fraction

209)960746 17 8 (4596 17 8 reſult.
1247
2024
1436
182
20

3657
1567
104
16

632
104

1672
0

See the proof of this operation in the preceding page.

ANTWERP AND FLANDERS.

Monies of Exchange, and Regulations.

A rixdollar = $2\frac{2}{5}$ florins = 48 patars = 8 ſhillings Flemiſh or 96 grotes Flemiſh.

A florin = 20 patars = $3\frac{1}{3}$ ſhillings Flemiſh or 40 grotes Flemiſh.

A patar or ſtiver = 16 penings or 2 grotes Flemiſh.

A pound Flemiſh = 20 ſhillings or 240 grotes Flemiſh.

A ſhilling Flemiſh = 6 patars or 12 grotes Flemiſh.

A grote Flemiſh = $\frac{1}{2}$ patar or 8 penings.

5 rixdollars = 12 florins.

3 florins = 10 ſhillings Flemiſh.

Exchange money is $16\frac{2}{3}$ per cent better than current money: therefore,

6 florins of exchange = 7 florins current.

Accounts are kept in florins, patars, and penings.

The value of uſances is the ſame as at Amſterdam, and there are 6 days of grace, Sundays and holidays included.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	37 ſhillings Flemiſh	*for*	1 pound ſterling.
France	*rec.*	$55\frac{1}{2}$ grotes Flemiſh	*for*	3 francs.
Hamburgh	*rec.*	$36\frac{1}{2}$ paſars	*for*	2 marcs lubs banco.
Holland	*giv.*	99 florins banco	*for*	100 florins of exchange.
Portugal	*rec.*	45 grotes Flemiſh	*for*	1 cruſade of 400 reis.
Spain	*rec.*	89 grotes Flemiſh	*for*	1 ducat of exchange.

N. B. Antwerp exchanges by exchange money.

ANTWERP AND FLANDERS ON LONDON.

Reduce 145 pounds 10 ſhillings ſterling into florins, patars, and penings of exchange, at the exchange of 38 ſhillings 2 grotes Flemiſh per pound ſterling.

EQUATION.

145 10 = x
1 pound = 38 ſhill. 2 grotes
1 ſhilling = 12 grotes
40 grotes = 1 florin.

RULE.

Multiply 145 10 by 38 2, price of exchange, and by 12 grotes; divide the product by 40 grotes.

145 10
38 2 × 12 = 458

1160
725
580
for 10 ſhillings - 229

40)66639(1665 19 8 reſult.
266
263
239
39
20

780
380
20
16

320
0

To prove this operation, multiply 1665 19 8 by 40 grotes; divide the product by 38 2, price of exchange, and by 12 grotes.

N. B. For the calculation of other operations, ſee Amſterdam.

AUGSBURGH.

Monies of Exchange, and Regulations.

A rixdollar *(thaler)* = 1½ gulden or 90 cruitzers.
A gulden = 60 cruitzers or 240 fenings.
There is exchange money and current money.
100 rixdollars of exchange = 127 rixdollars current
200 ditto................ = 381 guldens current
2 rixdollars current.... = 3 guldens current.
Accounts are kept in guldens and cruitzers.

The value of uſance is 15 days after acceptance.

Payments are made only every Wedneſday, and there is 1 day of grace for bills due on Tueſdays, while there are 8 for thoſe due on Wedneſdays.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	9¾ guldens	*for*	1 pound ſterling.
Amſterdam	*rec.*	113 rixd. exch.	*for*	100 rixdollars banco.
France	*rec.*	120 guldens	*for*	300 livres tournois.
Genoa	*giv.*	62 ſoldi fuori di banco.	*for*	1 gulden.
Hamburgh	*rec.*	118 rixd. exch.	*for*	100 rixdollars banco.
Leghorn	*giv.*	57 ſoldi buona moneta.	*for*	1 gulden.
Vienna	*giv.*	128 guldens	*for*	100 guldens.

AUGSBURGH ON LONDON.

Reduce 126 pounds 12 ſhillings 6 pence ſterling into guldens and cruitzers current, at the exchange of 9 guldens 45 cruitzers current per pound ſterling.

EQUATION.

126 12 6 = x

1 pound = 9 guldens 45 cruit.

RULE.

Multiply 126 12 6 by 9 45, price of exchange.

	126	12 6
	9	45
	1134	
for 30 cruitzers -	63	
for 15 ditto - -	31	30
for 10 ſhillings -	4	52½
for 2 do. 6 pence -	1	13⅛
	1234	35⅝ reſult.

To prove this operation, divide 1234 35 by 9 45, price of exchange.

AUGSBURGH ON AMSTERDAM.

Reduce 785 florins banco into guldens and cruitzers current, at the exchange of 112 rixdollars of exchange for 100 rixdollars banco.

EQUATION.

785 = x
5 florins - - - = 2 rixdollars banco
100 rixdollars banco = 112 rixdollars of exch.
100 rixdollars of exch. = 127 rixdollars current
2 rixdollars current = 3 guldens current.

RULE.

Multiply 785 by 112, price of exchange, and by 381; divide the product by 50000, fixed number.

```
       785
       112
      ----
      1570
      785
     785
    ------
     87920
       381
    ------
     87920
    703360
   263760
   -------
5,0000)3349,7520(669 57 reſult.
   34
    49
     47520
        60
   -------
   285,1200
     35
      0
```

To prove this operation, multiply 669 57 by 50000, fixed number; divide the product by 381, and by 112, price of exchange.

AUGSBURGH ON FRANCE.

Reduce 3738 livres 17 ſols 6 deniers tournois into guldens and cruitzers current, at the exchange of 124 guldens current for 300 livres tournois.

EQUATION.

3738 17 6 = x
300 livres = 124 guldens.

RULE.

Multiply 3738 17 6 by 124, price of exchange, and divide the product by 300 livres.

3738 17 6
124

14952
7476
3738
for 10 ſols - - 62
for 5 ditto - - 31
for 2 do. 6 deniers 15½

3,00)4636,20½(1545 24 reſult.
16
13
16
120
60

7230
1230
30

To prove this operation, multiply 1545 24 by 300 livres, and divide the product by 124, price of exchange.

AUGSBURGH ON HAMBURGH.

Reduce 546 marcs lubs banco into guldens and cruitzers current, at the exchange of 120 rixdollars of exchange for 100 rixdollars banco.

EQUATION.

546 = x

3 marcs banco = 1 rixdollar banco

100 rixdollars banco = 120 rixdollars of exch.

100 rixdollars of exch. = 127 rixdollars current

2 rixdollars current = 3 guldens current.

RULE.

Multiply 546 by 120, price of exchange, and by 127 rixdollars current; divide the product by 20000, fixed number.

```
      546
      120
    -----
    10920
    546
    -----
    65520
      127
    -----
   458640
  131040
  65520
  -------
2,0000)832,1040(416 3 reſult.
             60
           ----
         6,2400
```

To prove this operation, multiply 416 3 by 20000, fixed number; divide the product by 127 rixdollars current, and by 120, price of exchange.

BERLIN AND BRESLAW.

Monies of Exchange, and Regulations.

A pound banco = 24 groſhen banco or 30 good groſhen.
A groſhen banco = 12 fenings banco.
A Frederic = 5 rixdollars current.
A rixdollar current = 24 good groſhen.
A good groſhen = 12 fenings.
4 pounds banco = 5 rixdollars current.

Accounts are kept in rixdollars, good groſhen, and fenings current; and in pounds, groſhen, and fenings banco.

The value of uſance is 14 days after acceptance. 3 days of grace are allowed at Berlin, incluſive of Sundays and holidays, and 6 at Breſlaw.

N. B. Bills of exchange above 100 rixdollars muſt be paid in bank money.

BERLIN AND BRESLAW.

Courſe of Exchange.

IN BANCO.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	48 pence ſterling	*for*	1 pound banco.
Amſterdam	*giv.*	43 ſtivers banco	*for*	1 do. do.
France	*giv.*	97 ſols tournois	*for*	1 do. do.
Francfort	*giv.*	113 cruitzers	*for*	1 do. do.
Hamburgh	*giv.*	40 ſhillings lubs banco	*for*	1 do. do.
Vienna	*giv.*	148 cruitzers	*for*	1 do. do.

IN CURRENT.

London	*rec.*	6½ rixdollars current	*for*	1 pound ſterling.
Amſterdam	*rec.*	144 rixdollars current	*for*	100 rixdollars banco.
France	*rec.*	77 rixdollars current	*for*	300 livres tournois.
Francfort	*rec.*	98 rixdollars current	*for*	100 rixdollars.
Hamburgh	*rec.*	149 rixdollars current	*for*	100 rixdollars banco.
Vienna	*rec.*	78 rixdollars current	*for*	100 rixdollars.

N. B. For the calculation of operations in current money, ſee Leipſic.

BERLIN ON LONDON.

Reduce 345 pounds 8 ſhillings 5 pence ſterling into pounds, groſhen, and fenings banco, at the exchange of 49½ pence ſterling per pound banco.

EQUATION.

```
                 345  8  5 = x
1 pound    =     240  pence
49½ pence  =       1  pound.
```

RULE.

Reduce 345 8 5 into pence, and divide the product by 49½, price of exchange.

```
49½                   345  8  5
 2  fraction           20
————                 ————
 99 div.              6908
                        12
                     —————
                     13821
                     6908
                     —————
                     82901
                         2  fraction
                     —————
                99)165802(1674  18  5  reſult.
                     668
                      740
                       472
                        76
                        24
                       ————
                       304
                      152
                       ————
                      1824
                       834
                        42
                        12
                       ————
                        84
                       42
                       ————
                       504
                         9
```

To prove this operation, multiply 1674 18 5 by 49½, price of exchange, and divide the product by 240 pence.

BERLIN ON AMSTERDAM.

Reduce 2587 florins 10 ſtivers banco into pounds and groſhen banco, at the exchange of 44 ſtivers banco per pound banco.

EQUATION.

2587 10 = x
1 florin = 20 ſtivers
44 ſtivers = 1 pound.

RULE.

Multiply 2587 10 by 20 ſtivers, and divide the product by 44, price of exchange.

```
      2587 10
        20
    ------
44)51750(1176 3 reſult.
      77
      335
       270
         6
        24
      ----
       144
        12
```

To prove this operation, multiply 1176 3 by 44, price of exchange, and divide the product by 20 ſtivers.

BERLIN ON HAMBURGH.

Reduce 2648 marcs 12 ſhillings lubs banco into pounds and groſhen banco, at the exchange of 41 ſhillings lubs banco per pound banco.

EQUATION.

		2648 12 = x
1 marc	=	16 ſhillings
41 ſhillings	=	1 pound.

RULE.

Multiply 2468 12 by 16 ſhillings, and divide the product by 41, price of exchange.

2648 12
16

15900
2648

41)42380(1033 15 reſult.
138
150
27
24

108
54

648
238
33

To prove this operation, multiply 1033 15 by 41, price of exchange, and divide the product by 16 ſhillings.

BOLOGNA.

Monies of Exchange.

A lira………… = 20 ſoldi or 240 denari
A ſoldo………= 12 denari
A ſcudo di cambio = 85 ſoldi
4 ſcudi di cambio = 17 lire.

Accounts are kept in lire, ſoldi, and denari.

Courſe of Exchange.

	Uncertain Prices.	*Certain Prices.*
Amſterdam	*rec.*…41 ſoldi	*for*…1 florin banco.
France	*rec.*…56 ſoldi	*for*…3 livres tournois.
Genoa	*rec.*…92 ſoldi	*for*…6 lire fuori di banco.
Leghorn	*rec.*…89 ſoldi	*for*…1 pezza of 8 reals.
Milan	*rec.*…85 ſoldi	*for*…6 lire current.
Idem	*rec.*…119 ſoldi	*for*…1 crown.
Naples	*rec.*…78 ſoldi	*for*…1 ducat di regno.
Rome	*rec.*…97 ſoldi	*for*…1 crown current.
Vienna	*rec.*…29 ſoldi	*for*…1 gulden.

BREMEN.

Monies of Exchange, and Regulations.

A rixdollar = $2\frac{1}{4}$ marcs = 48 ſhillings or 72 grotes. Accounts are kept in rixdollars and grotes.

The value of uſance for bills drawn from London is 1 month after date, and from Germany 15 days after ſight.

8 days of grace are allowed.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Amſterdam	*rec.*	134 rixdollars	*for*	100 rixdollars banco.
Augſburgh	*rec.*	98 ditto	*for*	100 rixdollars current.
France	*rec.*	75 ditto	*for*	300 livres tournois.
Francfort	*rec.*	110 ditto	*for*	100 rixdollars current.
Hamburgh	*rec.*	142 ditto	*for*	100 rixdollars banco.
London	*rec.*	605 ditto	*for*	100 pounds ſterling.

BREMEN ON LONDON.

Reduce 373 pounds 17 ſhillings 6 pence ſterling into rixdollars and grotes, at the exchange of 604 rixdollars for 100 pounds ſterling.

EQUATION.

373 17 6 = x
100 pounds = 604 rixdollars.

RULE.

Multiply 373 17 6 by 604, price of exchange, and divide the product by 100 pounds.

```
                    373 17 6
                    604
                    ----
                    1492
                  22380
for 10 ſhillings -   302
for 5 ditto   -  -   151
for 2 do. 6 pence     75½
                 -------
         1,00)2258,20½(2258 14 reſult.
                    72
                    ----
                    1440
                      36
                    ----
                    14,76
```

To prove this operation, multiply 2258 14 by 100 pounds, and divide the product by 604, price of exchange.

COLOGNE.

Monies of Exchange, and Regulations.

A rixdollar ſpecie = 80 albus.
A rixdollar current = 78 albus.
An albus = 2 cruitzers or 8 hellers.
A cruitzer = 4 hellers or 6 fenings.
Accounts are kept in rixdollars and albus.

The value of uſance is 14 days after acceptance, and there are 6 days of grace for bills drawn at uſance.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Amſterdam	*rec.*	145 rixdollars current	*for*	100 rixdollars banco.
Antwerp	*rec.*	138 rixdollars ſpecie	*for*	100 rixdollars.
Augſburgh	*giv.*	99 rixdollars current	*for*	100 rixdollars current.
France	*rec.*	78 rixdollars current	*for*	300 livres tournois.
Leipſic	*rec.*	101 rixdollars ſpecie	*for*	100 rixdollars.

CONSTANTINOPLE AND SMYRNA.

Monies of Exchange.

A piaſtre = 40 paras or 120 aſpers.
A para = 3 aſpers.

Accounts are kept either in piaſtres and paras, in piaſtres and half paras, or in piaſtres and cents.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	18 piaſtres	*for*	1 pound ſterling.
Amſterdam	*rec.*	59 paras	*for*	1 florin current.
France	*giv.*	29 ſols tournois	*for*	1 piaſtre.
Genoa	*giv.*	24½ ſoldi fuori di banco.	*for*	1 piaſtre.
Leghorn	*rec.*	144 paras	*for*	1 pezza of 8 reals:
Naples	*rec.*	116 paras	*for*	1 ducat di regno.
Vienna	*rec.*	57 paras	*for*	1 gulden.

CONSTANTINOPLE ON LONDON.

Reduce 256 pounds 7 ſhillings 6 pence ſterling into piaſtres and paras, at the exchange of 17½ piaſtres per pound ſterling.

EQUATION.

256 7 6 = x
1 pound = 17½.

RULE.

Multiply 256 7 6 by 17½, price of exchange.

	256	7 6
	17½	
	1792	
	256	
for ½ - - - -	128	
for ¼ - - - -	4	15
for ⅛ - - - -	2	7½
	4486	22½ reſult.

To prove this operation, divide 4486 22½ by 17½, price of exchange.

CONSTANTINOPLE ON AMSTERDAM.

Reduce 2480 florins 17 ſtivers 8 penings current into piaſtres and paras, at the exchange of 62 paras for 1 florin current.

EQUATION.

2480 17 8 = x
1 florin = 62 paras
40 paras = 1 piaſtre.

RULE.

Multiply 2480 17 8 by 62, price of exchange, and divide the product by 40 paras.

2480 17 8
62

4960
14880
for $\frac{1}{2}$ - - - - 31
for $\frac{1}{4}$ - - - - 15 20
for $\frac{1}{8}$ - - - - 7 30

40)153814 10(3845 14 reſult.
338
181
214
14
40

570
170
10

To prove this operation, multiply 3845 14 by 40 paras, and divide the product by 62, price of exchange.

CONSTANTINOPLE ON GENOA.

Reduce 3634 lire 10 ſoldi fuori di banco into piaſtres and paras; at the exchange of 24½ ſoldi fuori di banco per piaſtre.

EQUATION.

3634 10 = x
1 lira = 20 ſoldi
24½ ſoldi = 1 piaſtre.

RULE.

Multiply 3634 10 by 20 ſoldi, and divide the product by 24½ ſoldi, price of exchange.

```
24½                 3634 10
 2 fraction           20
—                   ——————
49 div.             72690
                        2 fraction
                    ——————
               49)145380(2966 37 reſult.
                    473
                     328
                      340
                       46
                       40
                      ————
                     1840
                      370
                       27
```

To prove this operation, multiply 2966 37 by 24½, price of exchange, and divide by 20 ſoldi.

CONSTANTINOPLE ON LEGHORN.

Reduce 840 pezze 12 ſoldi 6 denari of 8 reals into piaſtres and paras, at the exchange of 148 paras per pezza of 8 reals.

EQUATION.

840 12 6 = x
1 pezza = 148 paras
40 paras = 1 piaſtre.

RULE.

Multiply 840 12 6 by 148, price of exchange, and divide the product by 40 paras.

840 12 6
148
6720
3360
840
for ½ - - - - 74
for ⅛ - - - - 18 20
40)124412 20(3110 12 reſult.
44
41
12
40
500
100
20

To prove this operation, multiply 3110 12 by 40 paras, and divide the product by 148, price of exchange.

COPENHAGEN AND DENMARK.

Monies of Exchange, and Regulations.

A rixdollar = 3 marcs lubs = 6 marcs Daniſh or 96 ſkillings Daniſh.

A marc Daniſh = 8 ſhillings lubs or 16 ſkillings Daniſh.

A ſkilling Daniſh = 6 fenings lubs or 12 fenings Daniſh.

Accounts are kept in rixdollars, ſkillings, and fenings Daniſh.

The value of uſance is not fixed.

There are 8 days of grace, which are not allowed for bills at ſight.

Courſe of Exchange.

	Uncertain Prices.	*Certain Prices.*
London	*rec.* 6 rixdollars	*for* 1 pound ſterling.
Amſterdam	*rec.* 129 rixdollars	*for* 100 rixdollars current.
Dantzic	*rec.* 88 rixdollars	*for* 100 rixdollars.
France	*rec.* 72 rixdollars	*for* 300 livres tournois.
Hamburgh	*rec.* 146 rixdollars	*for* 100 rixdollars banco.

COPENHAGEN ON LONDON.

Reduce 232 pounds 15 ſhillings 6 pence ſterling into rixdollars, ſkillings, and fenings Daniſh, at the exchange of 6 rixdollars 8 ſkillings per pound ſterling.

EQUATION.

$$232\ 15\ 6 = x$$
$$1 \text{ pound} = 6\ \ 8.$$

RULE.

Multiply 232 15 6 by 6 8, price of exchange.

	232	15	6
	6	8	
	1392		
for 8 ſkillings -	19	32	
for 10 ſhillings -	3	4	
for 5 ditto - -	1	50	
for 6 pence - -		14	7⅕
	1416	4	7⅕ reſult.

To prove this operation, divide 1416 4 7⅕ by 6 8, price of exchange.

COPENHAGEN ON AMSTERDAM.

Reduce 6834 florins current into rixdollars, ſkillings, and fenings Daniſh, at the exchange of 128 rixdollars Daniſh for 100 rixdollars current.

EQUATION.

$$6834 = x$$

$$2\tfrac{1}{2} \text{ florins} = 1 \text{ rixdollar}$$

$$100 \text{ rixdollars} = 128 \text{ rixdollars Daniſh.}$$

RULE.

Multiply 6834 by 128, price of exchange, and divide the product by 250, fixed number.

```
     6834
      128
   ------
    54672
   13668
   6834
   ------
250)874752(3499 0 9 reſult.
   1247
    2475
     2252
        2
       96
     ----
      192
       12
     ----
      384
     192
     ----
     2304
       54
```

To prove this operation, multiply 3499 0 9 by 250, fixed number, and divide the product by 128, price of exchange.

COPENHAGEN ON HAMBURGH.

Reduce 2547 marcs lubs banco into rixdollars, ſkillings, and ſenings Daniſh, at the exchange of 142 rixdollars Daniſh for 100 rixdollars banco.

EQUATION.

2547 = x
3 marcs = 1 rixdollar
100 rixdollars = 142 rixdollars Daniſh.

RULE.

Multiply 2547 by 142, price of exchange, and divide the product by 300, fixed number.

```
          2547
           142
          ----
          5094
        10188
        2547
        ------
300)361674(1205  55  8  reſult.
       616
        1674
         174
          96
         ----
        1044
       1566
       -----
       16704
        1704
         204
          12
         ----
         408
        204
        ----
        2448
          48
```

To prove this operation, multiply 1205 55 8 by 300, fixed number, and divide the product by 142, price of exchange.

DANTZIC AND KONIGSBERG.

Monies of Exchange, and Regulations.

A rixdollar *(Thaler)* = 3 florins or 90 groſhen.
A florin *(Gulden)* = 30 groſhen.

The above-mentioned monies are in currency of Little Poland, which is of double the value of that of Great Poland.

Accounts are kept in florins and groſhen current.

The value of uſance is 14 days after acceptance.

There are 10 days of grace, which are not allowed for bills at ſight.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	24 florins current	*for*	1 pound ſterling.
Amſterdam	*rec.*	372 groſhen ditto	*for*	1 pound Flemiſh.
France	*giv.*	76 ſols tournois	*for*	1 rixdollar current.
Francfort	*rec.*	105 groſhen current	*for*	1 rixdollar.
Hamburgh	*rec.*	169 groſhen ditto	*for*	1 rixdollar banco.
Leipſic	*giv.*	94 rixdollars	*for*	100 rixdollars.

DANTZIC ON LONDON.

Reduce 532 pounds 17 ſhillings 6 pence ſterling into florins current, at the exchange of 24 florins current per pound ſterling.

EQUATION.

532 17 6 = x
1 pound = 24 florins.

RULE.

Multiply 532 17 6 by 24, price of exchange.

```
                      532 17 6
                       24
                      ----
                      2128
                     1064
for 10 ſhillings  -    12
for 5 ditto   -   -     6
for 2 ditto 6 pence     3
                     -----
                     12789 reſult.
```

To prove this operation, divide 12789 by 24, price of exchange.

DANTZIC ON AMSTERDAM.

Reduce 4686 florins 10 ſtivers banco into florins and groſhen current, at the exchange of 372 groſhen current per pound Flemiſh.

EQUATION.

4686 10 = x
6 florins = 1 pound Flemiſh
1 pound = 372 groſhen
30 groſhen = 1 florin.

RULE.

Multiply 4686 10 by 372, price of exchange, and divide the product by 180, fixed number.

4686 10
372
———
9372
32802
14058
for 10 ſtivers - 186
———
180)1743378(9685 13 reſult
1233
1537
978
78
30
———
2340
540
0

To prove this operation, multiply 9685 13 by 180, fixed number, and divide the product by 372, price of exchange.

DANTZIC ON HAMBURGH.

Reduce 896 marcs 12 ſhillings lubs banco into florins and groſhen current, at the exchange of 168 groſhen per rixdollar banco.

EQUATION.

896 12 = x
3 marcs = 1 rixdollar
1 rixdollar = 168 groſhen
30 groſhen = 1 florin.

RULE.

Multiply 896 12 by 168, price of exchange, and divide the product by 90, fixed number.

896 12
168
———
7168
5376
896
for 8 ſhillings - 84
for 4 ditto - - 42
———
90)150654(1673 28 reſult.
606
665
354
84
30
———
2520
720
0

To prove this operation, multiply 1673 28 by 90, fixed number, and divide the product by 168, price of exchange.

FLORENCE.

Monies of Exchange.

A ſcudo d'oro = 20 ſoldi d'oro or 7 lire 10 ſoldi.
A ſoldo d'oro = 12 denari d'oro.
A ducat or piaſtra = 20 ſoldi = 240 denari or 7 lire.
A franceſcono = 10 paoli or $6\frac{2}{3}$ lire.
A pezza of 8 reals = 20 ſoldi = 240 denari or $5\frac{3}{4}$ lire.
14 ſcudi = 15 ducats.
23 ſcudi = 30 pezze.

Accounts are kept in ſcudi, ſoldi, and denari d'oro; and in ducats, ſoldi, and denari.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Amſterdam	*giv.*	90 grotes Flemiſh	*for*	1 pezza of 8 reals.
Bologna	*giv.*	87 ſoldi	*for*	1 do. do.
France	*giv.*	102 ſols in francs	*for*	1 do. do.
Genoa	*giv.*	126 ſoldi fuori di banco	*for*	1 do. do.
Leghorn	*rec.*	117 ſoldi	*for*	1 do. do.
Milan	*giv.*	126 ſoldi current	*for*	1 do. do.
Naples	*giv.*	114 ducats di regno	*for*	100 pezze do.
Rome	*rec.*	102 franceſconi	*for*	105 crowns current.
Vienna	*rec.*	47 ſoldi	*for*	1 gulden.

FRANCE.

Monies of Exchange, and Regulations.

A livre tournois = 20 ſols or 240 deniers.
A ſol tournois = 12 deniers.

A franc is divided into 100 cents, and is $1\frac{1}{4}$ per cent better than a livre tournois; that is to ſay, 100 francs are equal to $101\frac{1}{4}$ livres.

A franc is alſo divided by merchants into 20 ſols.

80 francs = 81 livres.

Accounts are kept in francs and cents.

Value of uſances for bills drawn from
Portugal and Spain........60 days after date.
London and other countries.30 days ditto.

There are 10 days of grace; but bills drawn at ſight, or at a fixed term, muſt be paid or proteſted after they are due.—No days of grace are allowed at Lyons.

FRANCE.

Preſent Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	24 livres tournois	*for*	1 pound ſterling.
Amſterdam	*giv.*	55 grotes Flemiſh	*for*	3 francs.
Augſburgh	*rec.*	52 ſols tournois	*for*	1 gulden current.
Berlin	*rec.*	97 ſols ditto	*for*	1 pound banco.
Idem	*giv.*	77 rixdollars	*for*	300 livres tournois.
Conſtantinople	*rec.*	62 ſols tournois	*for*	1 piaſtre.
Copenhagen	*giv.*	67 rixdollars	*for*	300 livres tournois.
Dantzic	*rec.*	75 ſols tournois	*for*	1 rixdollar current.
Francfort	*giv.*	76 rixdollars current	*for*	300 livres tournois.
Genoa	*rec.*	94 ſols in francs	*for*	1 pezza fuori di banco.
Hamburgh	*rec.*	194 livres tournois	*for*	100 marcs lubs banco.
Idem	*giv.*	25 ſhillings banco	*for*	3 francs.
Leghorn	*rec.*	102 ſols in francs	*for*	1 pezza of 8 reals.
Leipſic	*giv.*	77 rixdollars	*for*	300 livres tournois.
Liſbon	*giv.*	470 reis	*for*	3 francs.
Milan	*giv.*	$7\frac{1}{2}$ lire current	*for*	6 francs.
Naples	*rec.*	87 ſols tournois	*for*	1 ducat di regno.
Peterſburgh	*rec.*	68 ſols tournois	*for*	1 rouble.
Rome	*rec.*	104 ſols tournois	*for*	1 crown current.
Sicily	*giv.*	47 grains	*for*	1 livre tournois.
Spain	*rec.*	15 livres tournois	*for*	1 piſtole of exchange.
Idem	*rec.*	76 ſols tournois	*for*	1 dollar of exchange.
Stockholm	*giv.*	$25\frac{1}{2}$ ſkillings	*for*	3 livres tournois.
Venice	*giv.*	$2\frac{1}{4}$ lire piccole	*for*	1 livre tournois.
Vienna	*rec.*	41 ſols tournois	*for*	1 gulden.

FRANCE.

Courſe of Exchange in Francs.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	24 francs 10 cents	*for*	1 pound ſterling.
Amſterdam	*giv.*	55 grotes Flemiſh	*for*	3 francs.
Augſburgh	*rec.*	2 francs 60 cents	*for*	1 gulden current.
Berlin	*rec.*	4 francs 80 cents	*for*	1 pound banco.
Idem	*giv.*	78 rixdollars	*for*	300 francs.
Conſtantinople	*rec.*	3 francs 10 cents	*for*	1 piaſtre.
Copenhagen	*giv.*	67 rixdollars	*for*	300 francs.
Dantzic	*rec.*	3 francs 65 cents	*for*	1 rixdollar current.
Francfort	*giv.*	76 rixdollars current	*for*	300 francs.
Genoa	*rec.*	4 francs 76 cents	*for*	1 pezza fuori di banco.
Hamburgh	*rec.*	189 francs 24 cents	*for*	100 marcs lubs banco.
Idem	*giv.*	25 ſhillings banco	*for*	3 francs.
Leghorn	*rec.*	5 francs 05 cents	*for*	1 pezza of 8 reals.
Leipſic	*giv.*	77 rixdollars	*for*	300 francs.
Liſbon	*giv.*	470 reis	*for*	3 francs.
Milan	*giv.*	$7\frac{1}{2}$ lire current	*for*	6 francs.
Naples	*rec.*	4 francs 38 cents	*for*	1 ducat di regno.
Peterſburgh	*rec.*	3 francs 40 cents	*for*	1 rouble.
Rome	*rec.*	5 francs 20 cents	*for*	1 crown current.
Sicily	*giv.*	47 grains	*for*	1 franc.
Spain	*rec.*	14 francs 90 cents	*for*	1 piſtole of exchange.
Idem	*rec.*	3 francs 80 cents	*for*	1 dollar of exchange.
Stockholm	*giv.*	$25\frac{1}{2}$ ſkillings	*for*	3 francs.
Venice	*giv.*	$2\frac{1}{4}$ lire piccole	*for*	1 franc.
Vienna	*rec.*	2 francs 5 cents	*for*	1 gulden.

FRANCE ON LONDON.

Reduce 125 pounds 7 ſhillings 6 pence ſterling into livres, ſols, and deniers tournois, at the exchange of 25 livres 14 ſols tournois per pound ſterling.

EQUATION.

125 7 6 = x
1 pound = 25 livres 14 ſols.

RULE.

Multiply 125 7 6 by 25 14, price of exchange.

	125	7	6
	25	14	
	625		
	250		
for 10 ſols - -	62	10	
for 4 ditto - -	25		
for 5 ſhillings -	6	8	6
for 2 ditto 6 pence	3	4	3
	3222	2	9 reſult.

See the proof of this operation, page 44.

To reduce livres, ſols, and deniers tournois into francs and cents, multiply the ſum by 80, and divide the product by 81.

FRANCE ON LONDON.

Reduce 102 pounds 12 ſhillings 9 pence ſterling into francs and cents, at the exchange of 24 francs 80 cents per pound ſterling.

EQUATION.

102 12 9 = x

1 pound = 24 francs 80 cents.

RULE.

Multiply 102 12 9 by 24 80, price of exchange.

```
                          102 12 9
                           24 80
                         ---------
                          408
                         204
for 80 cents    -  -       81 60
for 10 ſhillings   -       12 40
for  2  ditto   -  -        2 48
for 9 pence     -  -          93
                         ---------
                         2545 41 reſult.
```

See the proof of this operation, page 45.

N. B. Bordeaux and Bayonne exchange with London by francs and cents.

To reduce francs and cents into livres, ſols, and deniers tournois, multiply the ſum by 81, and divide the product by 80.

FRANCE ON AMSTERDAM.

Reduce 475 florins 10 ſtivers 12 penings banco into francs and cents, at the exchange of 54 grotes Flemiſh banco for 3 francs.

EQUATION.

475 10 12 = x.
1 florin = 40 grotes.
54 grotes = 3 francs.

RULE.

Multiply 475 10 12 by 120, fixed number, and divide the product by 54, price of exchange.

475 10 12
120

9500
475
for 10 ſtivers - 60
for 8 penings - 3
for 4 ditto - - 1½

54)57064½(1056 75 reſult.
306
364
40
100

4050
270
0

See the proof of this operation, page 58.

FRANCE ON GENOA.

Reduce 240 pezze 7 ſoldi 6 denari fuori di banco into francs and cents, at the exchange of 96 ſols in francs per pezza of 115 ſoldi fuori di banco.

EQUATION.

240 7 6 = x
1 pezza = 96 ſols
20 ſols = 1 franc.

RULE.

Multiply 240 7 6 by 96, price of exchange, and divide the product by 20 ſols.

240 7 6
96

1440
2160
for 5 ſoldi - - 24
for 2 do. 6 den. 12

20)23076(1153 80 reſult.
30
107
76
16
100

1600
00

See the proof of this operation, page 124.

FRANCE ON HAMBURGH.

Reduce 412 marcs 12 ſhillings 6 fenings lubs banco into livres and ſols tournois, at the exchange of 196 livres tournois for 100 marcs lubs banco.

EQUATION.

412 12 6 = x
100 marcs = 196 livres.

RULE.

Multiply 412 12 6 by 196, price of exchange, and divide the product by 100 marcs.

412 12 6
196

2472
3708
412
for 8 ſhillings - - 98
for 4 ditto - - - 49
for 6 fenings - - $6\frac{1}{8}$

1,00)809,05$\frac{1}{8}$(809 1 reſult.
20

100
for $\frac{1}{8}$ - - - - 2 6

1,02 6
12

30

To prove this operation, multiply 809 1 by 100 marcs, and divide the product by 196, price of exchange.

FRANCE ON HAMBURGH.

Reduce 1466 marcs 6 ſhillings 1 fening lubs banco into francs and cents, at the exchange of 25½ ſhillings lubs banco for 3 francs.

EQUATION.

1466 6 1 = x
1 marc = 16 ſhillings
25½ ſhillings = 3 francs.

RULE.

Multiply 1466 6 1 by 48, fixed number, and divide the product by 25½, price of exchange.

25½	1466 6 1
2 fraction	48
51 div.	11728
	5864
for 4 ſhillings -	12
for 2 ditto - -	6
for 1 fening -	¼
	70386¼
	2 fraction

51)140772½(2760 24 reſult.
387
307
12
100
1250
230
26

See the proof of this operation, page 137.

N. B. Bordeaux and Bayonne exchange with Hamburgh by francs and cents

FRANCE ON LEGHORN.

Reduce 760 pezze 7 ſoldi 6 denari of 8 reals into francs and cents, at the exchange of 104 ſols in francs per pezza of 8 reals.

EQUATION.

760 7 6 = x
1 pezza = 104 ſols
20 ſols = 1 franc.

RULE.

Multiply 760 7 6 by 104, price of exchange, and divide the product by 20 ſols.

760 7 6
104

3040
7600
for 5 ſoldi - - 26
for 2 ditto 6 den. 13

20)79079(3953 95 reſult.
190
107
79
19
100

1900
100
0

See the proof of this operation, page 147.

FRANCE ON PORTUGAL.

Reduce 135815 reis into francs and cents, at the exchange of 460 reis for 3 francs.

EQUATION.

135815 = x
460 reis = 3 francs.

RULE.

Multiply 135815 by 3 francs, and divide the product by 460 reis, price of exchange.

```
      135815
           3
      ------
460)407445(885 75 refult.
     3944
      2645
       345
       100
     ------
     34500
      2300
         0
```

See the proof of this operation, page 175.

FRANCE ON SPAIN.

Reduce 187 piſtoles 22 reals of plate into livres and ſols tournois, at the exchange of 14 livres 8 ſols tournois per piſtole of exchange.

EQUATION.

187 22 = x

1 piſtole = 14 livres 8 ſols.

RULE.

Multiply 187 22 by 14 8, price of exchange.

	187	22
	14	8
	748	
	187	
for 4 ſols - - -	37	8
for 4 ſols - - -	37	8
for 16 reals - -	7	4
for 4 reals - - -	1	16
for 2 reals - - -		18
	2702	14 reſult.

See the proof of this operation, page 198.

FRANCE ON SPAIN.

Reduce 290 dollars 7 reals 17 maravedis of plate into livres, ſols, and deniers tournois, at the exchange of 76 ſols tournois per dollar of exchange.

EQUATION.

290 7 17 = x
1 dollar = 76 ſols
20 ſols = 1 livre.

RULE.

Multiply 290 7 17 by 76, price of exchange, and divide the product by 20 ſols.

```
                 290   7  17
                  76
               ------------
                1740
               2030
for 4 reals   -   38
for 2 reals   -   19
for 1 real    -    9   6
for 17 maravedis   4   9
               ------------
           20)22111   3
               ------------
               1105  11  3 reſult.
```

See the proof of this operation, page 199.

N. B. Lyons exchanges with Spain by ſols tournois.

FRANCFORT ON THE MAINE.

Monies of Exchange, and Regulations.

A rixdollar *(Thaler)* = 1½ gulden = 22½ batzen or 90 cruitzers.

A gulden = 15 batzen or 60 cruitzers.
A batzen = 4 cruitzers or 16 fenings.
2 rixdollars = 3 guldens.
2 ditto = 45 batzen.

Accounts are kept in rixdollars and cruitzers current, and in guldens and cruitzers current.

4 days of grace are allowed; but bills at ſight muſt be paid or proteſted when due.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	145½ batzen	*for*	1 pound ſterling.
Amſterdam	*rec.*	139 rixdollars	*for*	100 rixdollars current.
Augſburgh	*rec.*	99 guldens	*for*	100 guldens current.
Bremen	*giv.*	106 rixdollars	*for*	100 rixdollars.
France	*rec.*	77 rixdollars	*for*	300 livres tournois.
Hamburgh	*rec.*	147 rixdollars	*for*	100 rixdollars banco.
Vienna	*rec.*	77 guldens	*for*	100 guldens.

FRANCFORT ON LONDON.

Reduce 548 pounds 17 ſhillings 6 pence ſterling into rixdollars and cruitzers, at the exchange of 146 batzen per pound ſterling.

EQUATION.

548 17 6 = x
1 pound = 146 batzen
45 batzen = 2 rixdollars.

RULE.

Multiply 548 17 6 by 146, price of exchange, and by 2 rixdollars; divide the product by 45 batzen.

```
                   548 17 6
       146 × 2 =   292
                   ----
                   1096
                  4932
                 1096
for 10 ſhillings    146
for  5  ditto  -     73
for  2  do. 6 pence  36½
             --------
          45)160271½(3561 53 reſult.
               252
                277
                  71
                  26
                  90
                 ---
                2385
                 135
                   0
```

To prove this operation, multiply 3561 53 by 45 batzen; and divide the product by 146, price of exchange, and by 2 rixdollars.

FRANCFORT ON FRANCE.

Reduce 6375 livres 10 ſols tournois into rixdollars and cruitzers current, at the exchange of 76 rixdollars current for 300 livres tournois.

EQUATION.

6375 10 = x

300 livres = 76 rixdollars.

RULE.

Multiply 6375 10 by 76, price of exchange, and divide the product by 300 livres.

6375 10
76

38250
44625
for 10 ſols - 38

300)484538(1615 11 reſult.
1845
453
1538
38
90

3420
420
120

To prove this operation, multiply 1615 11 by 300 livres, and divide the product by 76, price of exchange.

FRANCFORT ON HAMBURGH.

Reduce 3648 marcs 8 ſhillings lubs banco into rixdollars and cruitzers current, at the exchange of 146 rixdollars current for 100 rixdollars banco.

EQUATION.

3648 8 = x
3 marcs = 1 rixdollar
100 rixdollars = 146 rixdollars.

RULE.

Multiply 3648 8 by 146, price of exchange, and divide the product by 300, fixed number.

3648 8
146

21888
14592
3648
for 8 ſhillings - 73

---

300)532681(1775 54 reſult.
2326
2268
1681
181
90

16290
1290
90

To prove this operation, multiply 1775 54 by 300, fixed number, and divide the product by 146, price of exchange.

GENEVA.

Monies of Exchange, and Regulations.

A crown current or patagon = 3 livres or 60 ſols current.
A livre current = 20 ſols or 240 deniers current.
A ſol current = 12 deniers current.
Accounts are kept in livres, ſols, and deniers current.

The value of uſance for bills drawn from France, England, and Holland, is 30 days after date, and from Germany and Italy 15 days after ſight.

There are 5 days of grace excluſive of Sundays.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	49 pence ſterling	*for*	1 crown current.
Amſterdam	*giv.*	89 grotes Flemiſh	*for*	1 crown current.
Augſburgh	*giv.*	127 rixdollars current	*for*	100 crowns current.
France	*giv.*	166 francs	*for*	100 livres current.
Genoa	*rec.*	95 crowns current	*for*	100 pezze fuori di banco.
Hamburgh	*rec.*	23 ſols current	*for*	1 marc lubs banco.
Leghorn	*rec.*	104 crowns current	*for*	100 pezze of 8 reals.
Milan	*rec.*	98 crowns current	*for*	640 lire current.
Spain	*rec.*	44 ſols current	*for*	1 dollar of exchange.
Switzerland	*rec.*	161 livres current	*for*	100 florins.
Turin	*giv.*	84 ſoldi	*for*	1 crown current.

GENEVA ON LONDON.

Reduce 288 pounds 5 ſhillings 9 pence ſterling into livres, ſols, and deniers current, at the exchange of 48 pence ſterling per crown current.

EQUATION.

288 5 9 = x
1 pound = 240 pence
48 pence = 1 crown
1 crown = 3 livres.

RULE.

Multiply 288 5 9 by 720, fixed number, and divide the product by 48, price of exchange.

288 5 9
720

5760
2016
for 5 ſhillings - 180
for 9 pence - - 27

48)207567(4324 6 3 reſult.
155
116
207
15
20

300
12
12

144
0

To prove this operation, multiply 4324 6 3 by 48, price of exchange, and divide the product by 720, fixed number.

GENEVA ON AMSTERDAM.

Reduce 356 florins 17 ſtivers 8 penings banco into livres, ſols, and deniers current, at the exchange of 90 grotes Flemiſh banco per crown current.

EQUATION.

356 17 8 = x
1 florin = 40 grotes
90 grotes = 1 crown
1 crown = 3 livres.

RULE.

Multiply 356 17 8 by 120, fixed number, and divide the product by 90, price of exchange.

```
                          356 17 8
                          120
                         -----
                          7120
                         356
for 10 ſtivers  - -         60
for  5 ditto    - -         30
for  2 do. 8 penings        15
                       -------
                    90)42825(475 16 8 reſult.
                        682
                          525
                           75
                           20
                        -----
                         1500
                          600
                           60
                           12
                        -----
                          720
                            0
```

To prove this operation, multiply 475 16 8 by 90, price of exchange, and divide the product by 120, fixed number.

GENEVA ON FRANCE.

Reduce 605 francs 85 cents into livres, ſols, and deniers current, at the exchange of 168 francs for 100 livres current.

EQUATION.

605 85 = x
168 francs = 100 livres.

RULE.

Multiply 605 85 by 100 livres current, and divide the product by 168, price of exchange.

```
       605 85
       100
      ------
168)60585(360 12 6 reſult.
     1018
      105
       20
      ----
     2100
      420
       84
       12
      ----
      168
      84
      ----
     1008
        0
```

To prove this operation, multiply 360 12 6 by 168, price of exchange, and divide the product by 100 livres.

GENEVA ON HAMBURGH.

Reduce 189 marcs 12 ſhillings 6 fenings lubs banco into livres, ſols, and deniers current, at the exchange of 23 ſols current per marc lubs banco.

EQUATION.

189 12 6 = x
1 marc = 23 ſols
20 ſols = 1 livre.

RULE.

Multiply 189 12 6 by 23, price of exchange, and divide the product by 20 ſols.

	189	12	6
	23		
	567		
	378		
for 8 ſhillings -	11	10	
for 4 ditto - -	5	15	
for 6 fenings -		$14\frac{3}{8}$	
	20)4364	$19\frac{3}{8}$	
	218	4	11 reſult.

To prove this operation, multiply 218 4 11 by 20 ſols, and divide the product by 23, price of exchange.

GENOA.

Monies of Exchange, and Regulations.

A pezza fuori di banco, or out of bank, which is divided into 20 ſoldi, and a ſoldo into 12 denari, = 5 lire banco = $5\frac{3}{4}$ lire or 115 ſoldi fuori di banco.

A crown of exchange (*ſcudo di cambio*) = 4 lire banco = $4\frac{3}{5}$ lire or 92 ſoldi fuori di banco.

A gold crown (*ſcudo de oro*) is reckoned 10 lire 14 ſoldi or 214 ſoldi fuori di banco.

A lira banco and a lira fuori di banco are each divided into 20 ſoldi, and a ſoldo into 12 denari; but 100 lire banco = 115 lire fuori di banco.

A zecchino.......... = $13\frac{1}{2}$ lire fuori di banco.
4 pezze............. = 5 crowns of exchange.
214 pezze............. = 115 gold crowns.
107 lire fuori di banco .. = 10 gold crowns.
107 crowns of exchange = 46 gold crowns.

Accounts are kept in lire, ſoldi, and denari fuori di banco.

Value of uſances for bills drawn from
London and Liſbon..............3 months after date.
Amſterdam, Hamburgh, and Spain.2 months after date.
Leghorn and Milan ....8 days after ſight.

There are 30 days of grace, but bills are generally proteſted in the week after they are due.

GENOA.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	46 pence ſterling	*for*	1 pezza fuori di banco.
Amſterdam	*giv.*	86 grotes Flemiſh	*for*	1 pezza fuori di banco.
Augſburgh	*rec.*	62 ſoldi fuori di banco	*for*	1 gulden current.
Conſtantinople	*rec.*	32 ſoldi fuori di banco	*for*	1 piaſtre.
France	*giv.*	98 ſols in francs	*for*	1 pezza fuori di banco.
Hamburgh	*rec.*	46 ſoldi fuori di banco	*for*	1 marc lubs banco.
Leghorn	*rec.*	127 ſoldi fuori di banco	*for*	1 pezza of 8 reals.
Liſbon	*giv.*	750 reis	*for*	1 pezza fuori di banco.
Milan	*giv.*	87 ſoldi current	*for*	1 crown of exchange.
Naples	*rec.*	104 ſoldi fuori di banco	*for*	1 ducat di regno.
Rome	*rec.*	132 ſoldi fuori di banco	*for*	1 crown current.
Sicily	*giv.*	39 carlins	*for*	1 gold crown.
Smyrna	*rec.*	32 ſoldi fuori di banco	*for*	1 piaſtre.
Spain	*giv.*	680 maravedis	*for*	1 gold crown.
Venice	*giv.*	38 ſoldi piccoli	*for*	1 lira fuori di banco.
Vienna	*rec.*	45 ſoldi fuori di banco	*for*	1 gulden.

GENOA ON LONDON.

Reduce 239 pounds 11 ſhillings 3 pence ſterling into lire, ſoldi, and denari fuori di banco, at the exchange of 45 pence ſterling per pezza of 5 lire 15 ſoldi fuori di banco.

EQUATION.

239 11 3 = x
1 pound = 240 pence
45 pence = 1 pezza
1 pezza = 5 lire 15 ſoldi.

RULE.

Reduce 239 11 3 into pence; divide the product by 45, price of exchange; and multiply the quotient by 5 lire 15 ſoldi.

239 11 3
20
4791
12
9585
4791
45)57495 (1277 13 4 pezze
124 5 15
349
345 6385
30 638 10 for 10 ſoldi
20 319 5 - 5 ditto
2 17 6 - 10 ditto
600 19 2 - 3 do. 4 den.
150
15 7346 11 8 reſult.
12
180
0

See the proof of this operation, page 46.

GENOA ON AMSTERDAM.

Reduce 1215 florins 10 ſtivers banco into lire fuori di banco, at the exchange of 85 grotes Flemiſh banco per pezza of $5\frac{3}{4}$ lire fuori di banco.

EQUATION.

1215 10 = x
1 florin = 40 grotes
85 grotes = 1 pezza
1 pezza = $5\frac{3}{4}$ lire.

RULE.

Multiply 1215 10 by 230, fixed number, and divide the product by 85, price of exchange.

1215 10
230
———
36450
2430
for 10 ſtivers - 115
———
85)279565(3289 reſult = 572 pezze.
245
756
765
0

See the proof of this operation, page 59.

GENOA ON FRANCE.

Reduce 1153 francs 80 cents into lire, ſoldi, and denari fuori di banco, at the exchange of 96 ſols in francs per pezza of 5¾ lire fuori di banco.

EQUATION.

1153 80 = x
1 franc = 20 ſols
96 ſols = 1 pezza
1 pezza = 5¾ lire.

RULE.

Multiply 1153 80 by 115, fixed number, and divide the product by 96, price of exchange.

1153 80
115
———
5765
1153
1153
for 50 cents - 57 10
for 30 cents - 34 10
———
96)132687(1382 3 1½ reſult = [240 7 6 pezze.
366
788
207
15
20
———
300
12
12
———
144
48

See the proof of this operation, page 104.

GENOA ON HAMBURGH.

Reduce 789 marcs 13 ſhillings 4 fenings lubs banco into lire, ſoldi, and denari fuori di banco, at the exchange of 46½ ſoldi fuori di banco per marc lubs banco.

EQUATION.

789 13 4 = x
1 marc = 46½ ſoldi
20 ſoldi = 1 lira.

RULE.

Multiply 789 13 4 by 46½, price of exchange, and divide the product by 20 ſoldi.

789 13 4
46½

4734
3156
for ½ - - - 394 10
for 8 ſhillings 23 5
for 4 ditto - 11 12 6
for 1 do. 4 fenings 3 17 6

20)36727 5

1836 7 3 reſult.

To prove this operation, multiply 1836 7 3 by 20, and divide the product by 46½, price of exchange.

GENOA ON LEGHORN.

Reduce 210 pezze 16 ſoldi 8 denari of 8 reals into lire, ſoldi, and denari fuori di banco, at the exchange of 124 ſoldi fuori di banco per pezza of 8 reals.

EQUATION.

210 16 8 = x
1 pezza = 124 ſoldi
20 ſoldi = 1 lira.

RULE.

Multiply 210 16 8 by 124, price of exchange, and divide the product by 20 ſoldi.

210 16 8
124

840
420
210
for 10 ſoldi - 62
for 5 ditto - 31
for 1 do. 8 den. 10 6 8

20)26143 6 8

1307 3 4 reſult.

See the proof of this operation, page 148.

GENOA ON NAPLES.

Reduce 257 ducats 50 grains di regno into lire, ſoldi, and denari fuori di banco, at the exchange of 104½ ſoldi fuori di banco per ducat di regno.

EQUATION.

257 50 = x
1 ducat = 104½ ſoldi
20 ſoldi = 1 lira.

RULE.

Multiply 257 50 by 104½, price of exchange, and divide the product by 20 ſoldi.

	257	50
	104½	
	1028	
	2570	
for ½ - - - -	128	10
for 50 grains - -	52	5
	20)26908	15
	1345	8 9 reſult.

See the proof of this operation, page 165.

GENOA ON PORTUGAL.

Reduce 228834 reis into lire, ſoldi, and denari fuori di banco, at the exchange of 720 reis per pezza of $5\frac{3}{4}$ lire fuori di banco.

EQUATION.

$228834 = x$

$720 \text{ reis} = 1 \text{ pezza}$

$1 \text{ pezza} = 5\frac{3}{4} \text{ lire.}$

RULE.

Multiply 228834 by $5\frac{3}{4}$ lire, and divide the product by 720, price of exchange.

228834
$5\frac{3}{4}$
1144170
for $\frac{1}{2}$ - - - - 114417
for $\frac{1}{4}$ - - - - $57208\frac{1}{2}$
[317 16 6 pezze.
$720)1315795\frac{1}{2}(1827$ 9 $10\frac{1}{2}$ reſult =
5957
1979
5395
355
20
7110
630
12
1260
630
7560
360

See the proof of this operation, page 176.

GENOA ON SICILY.

Reduce 75 ounces 22 tarins 10 grains into lire, ſoldi, and denari fuori di banco, at the exchange of 39 carlins per gold crown of 10 lire 14 ſoldi fuori di banco.

EQUATION.

75 22 10 = x
1 ounce = 60 carlins
39 carlins = 10 lire 14 ſoldi.

RULE.

Multiply 75 22 10 by 642, fixed number, and divide the product by 39, price of exchange.

75 22 10
642

150
300
450
for 15 tarins - 321
for 7 do. 10 grains 160 10

39)48631 10(1246 19 2 reſult.
96
183
271
37
20

750
360
9
12

108
30

To prove this operation, multiply 1246 19 2 by 39, price of exchange, and divide the product by 642, fixed number.

GENOA ON SPAIN.

Reduce 485 dollars 7 reals 7 maravedis of plate into lire, ſoldi, and denari fuori di banco, at the exchange of 660 maravedis of plate per gold crown of 10 lire 14 ſoldi fuori di banco.

EQUATION.

485 7 7 = x
1 dollar = 272 maravedis
660 maravedis = 10 lire 14 ſoldi.

RULE.

Reduce 485 7 7 into maravedis; multiply by 10 lire 14 ſoldi; and divide the product by 660, price of exchange.

485 7 7
8
3887
34
15555
11661
132165
10 14
1321650
for 10 ſoldi - 66082½
for 4 ditto - 26433
660)1414165½(2142 13 6 reſult.
941
2816
1765
445
20
8910
2310
330
12
3960
0

To prove this operation, multiply 2142 13 6 by 660, price of exchange; divide the product by 10 lire 14 ſoldi, and reduce the quotient into dollars.

GENOA ON VENICE.

Reduce 1820 lire 16 ſoldi 8 denari piccoli into lire, ſoldi, and denari fuori di banco, at the exchange of 38 ſoldi piccoli per lira fuori di banco.

EQUATION.

1820 16 8 = x
1 lira = 20 ſoldi
38 ſoldi = 1 lira.

RULE.

Multiply 1820 16 8 by 20 ſoldi, and divide the product by 38, price of exchange.

```
       1820 16 8
         20
    ______________
 38)36416 13 4(958 6 8 reſult.
     221
      316
       12
       20
      ____
      253
       25
       12
      ____
       54
      25
      ____
      304
        0
```

See the proof of this operation, page 231.

HAMBURGH AND ALTONA.

Monies of Exchange, and Regulations.

A rixdollar = 3 marcs lubs = 48 ſhillings lubs = 8 ſhillings Flemiſh or 96 grotes Flemiſh.

A marc lubs = 16 ſhillings lubs = 192 fenings lubs = 2⅔ ſhillings Flemiſh or 32 grotes Flemiſh.

A ſhilling lubs = 12 fenings lubs or 2 grotes Flemiſh.

A pound Flemiſh = 20 ſhillings Flemiſh = 240 grotes Flemiſh or 7½ marcs lubs.

A ſhilling Flemiſh = 12 grotes Flemiſh or 6 ſhillings lubs.

A grote Flemiſh = ½ ſhilling lubs or 6 fenings lubs.

3 marcs lubs = 8 ſhillings Flemiſh.

Accounts are kept in marcs, ſhillings, and fenings lubs.

Value of uſances for bills drawn from
England and France....... 1 month after date.
Italy, Portugal, and Spain..2 months after date.

There are 12 days of grace, Sundays and holidays included; but bills due on Sunday or on a holiday muſt be paid or proteſted the day before.

The difference between bank money and current money is from 18 to 26 per cent, that is to ſay,

100 marcs banco = from 118 to 126 marcs current.

HAMBURGH AND ALTONA.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	35 ſhillings Flemiſh	*for*	1 pound ſterling.
Augſburgh	*giv.*	149 rixdollars current	*for*	100 rixdollars banco.
Breſlaw	*rec.*	42 ſhillings lubs banco	*for*	1 pound banco.
Copenhagen	*giv.*	148 rixdollars	*for*	100 rixdollars banco.
France	*rec.*	25 ſhillings lubs banco	*for*	3 francs.
Genoa	*rec.*	78 grotes Flemiſh	*for*	1 pezza fuori di banco.
Holland	*giv.*	34 ſtivers banco	*for*	2 marcs lubs banco.
Idem	*giv.*	108 florins current	*for*	120 marcs lubs banco.
Leghorn	*rec.*	84 grotes Flemiſh	*for*	1 pezza of 8 reals.
Milan	*rec.*	145 ſoldi current	*for*	1 rixdollar banco.
Portugal	*rec.*	43 grotes Flemiſh	*for*	1 cruſade of 400 reis.
Prague	*giv.*	204 guldens current	*for*	200 marcs lubs banco.
Spain	*rec.*	84 grotes Flemiſh	*for*	1 ducat of exchange.
Switzerland	*rec.*	24 ſhillings lubs banco	*for*	3 livres.
Idem	*giv.*	25 ſols	*for*	1 marc lubs banco.
Venice	*giv.*	4 lire 8 ſoldi piccoli	*for*	1 marc lubs banco.
Vienna	*giv.*	203 guldens current	*for*	200 marcs lubs banco.

HAMBURGH ON LONDON.

Reduce 106 pounds 17 ſhillings 6 pence ſterling into marcs, ſhillings, and fenings lubs banco, at the exchange of 35 ſhillings 4 grotes Flemiſh banco per pound ſterling.

EQUATION.

106 17 6 = x
1 pound = 35 ſhill. 4 grotes
1 ſhilling = 12 grotes
32 grotes = 1 marc.

RULE.

Multiply 106 17 6 by 35 4, price of exchange, and by 12 grotes; divide the product by 32 grotes.

```
                    106 17 6
 35 4 × 12 =424
            ————
             424
            212
           424
for 10 ſhillings -  212
for  5 ditto -   -  106
for  2 do. 6 pence   53
          —————
        32)45315(1416 1 6 reſult.
           133
             51
             195
               3
              16
            ————
              48
              16
              12
            ————
             192
               0
```

See the proof of this operation, page 47.

N. B. When the price of exchange conſiſts of ſhillings Flemiſh only, multiply the price of exchange by 3 inſtead of 12, and divide the product by 8 inſtead of 32.

HAMBURGH ON AMSTERDAM.

Reduce 3231 florins 4 ſtivers 4 penings banco into marcs, ſhillings, and fenings lubs banco, at the exchange of 34½ ſtivers banco for 2 marcs lubs banco.

EQUATION.

3231 4 4 = x

1 florin = 20 ſtivers

34½ ſtivers = 2 marcs.

RULE.

Multiply 3231 4 4 by 40, fixed number, and divide the product by 34½, price of exchange.

34½	3231 4 4
2 fraction	40
69	129240
for 4 ſtivers - -	8
for 4 penings -	½
	129248½
	2 fraction

69)258497(3746 5 4 reſult.
514
319
437
23
16

138
23

368
23
12

276
0

See the proof of this operation, page 60.

HAMBURGH ON AMSTERDAM.

Reduce 2521 florins 9 ſtivers 8 penings current into marcs and ſhillings lubs banco, at the exchange of 106 florins current for 120 marcs lubs banco.

EQUATION.

2521 9 8 = x
106 florins = 120 marcs.

RULE.

Multiply 2521 9 8 by 120 marcs, and divide the product by 106, price of exchange.

2521 9 8
120

50420
2521
for 5 ſtivers - - 30
for 4 ditto - - 24
for 8 penings - 3

106)302577(2854 8 reſult.
905
577
477
53
16

318
53

848
0

See the proof of this operation, page 61.

HAMBURGH ON FRANCE.

Reduce 2760 francs 25 cents into marcs, ſhillings, and fenings lubs banco, at the exchange of $25\frac{1}{2}$ ſhillings lubs banco for 3 francs.

EQUATION.

2760 25 = x
3 francs = $25\frac{1}{2}$ ſhillings
16 ſhillings = 1 marc.

RULE.

Multiply 2760 25 by $25\frac{1}{2}$ price of exchange, and divide the product by 48, fixed number.

2760 25
$25\frac{1}{2}$
13800
5520
for $\frac{1}{2}$ - - - - - 1380
for 25 cents - - $6\frac{6}{16}$
48)70386 6(1466 6 1 reſult.
223
318
306
18
16
114
18
294
6
12
72
24

See the proof of this operation, page 106.

HAMBURGH ON GENOA.

Reduce 424 pezze 18 ſoldi 4 denari fuori di banco into marcs, ſhillings, and fenings lubs banco, at the exchange of 78 grotes Flemiſh banco per pezza of 115 ſoldi fuori di banco.

EQUATION.

424 18 4 = x
1 pezza = 78 grotes
32 grotes = 1 marc.

RULE.

Multiply 424 18 4 by 78, price of exchange, and divide the product by 32 grotes.

424 18 4
78
———
3392
2968
for 10 ſoldi - 39
for 5 ditto - $19\frac{1}{2}$
for 2 do. 6 den. $9\frac{3}{4}$
for 10 den. - $3\frac{1}{4}$
———
32)$33143\frac{1}{2}$(1035 11 9 reſult.
114
183
23
16
———
146
23
———
376
56
24
12
———
288
0

To prove this operation, multiply 1035 11 9 by 32 grotes, and divide the product by 78, price of exchange.

HAMBURGH ON LEGHORN.

Reduce 354 pezze 17 ſoldi 6 denari of 8 reals into marcs, ſhillings, and fenings lubs banco, at the exchange of 84 grotes Flemiſh banco per pezza of 8 reals.

EQUATION.

354 17 6 = x
1 pezza = 84 grotes
32 grotes = 1 marc.

RULE.

Multiply 354 17 6 by 84, price of exchange, and divide the product by 32 grotes.

```
                    354 17 6
                     84
                   ------
                   1416
                  2832
for 10 ſoldi   -     42
for  5 ditto   -     21
for  2 do. 6 den.    10½
                  --------
              32)29809½(931 8 9 reſult.
                   100
                     49
                     17
                     16
                   ----
                    110
                    17
                   ----
                    280
                     24
                     12
                   ----
                     48
                    24
                   ----
                    288
                      0
```

See the proof of this operation, page 149.

HAMBURGH ON PORTUGAL.

Reduce 534 cruſades 160 reis into marcs and ſhillings lubs banco, at the exchange of 42½ grotes Flemiſh banco per cruſade of 400 reis.

EQUATION.

534 160 = x
1 cruſade = 42½ grotes
32 grotes = 1 marc.

RULE.

Multiply 534 160 by 42½, price of exchange, and divide the product by 32 grotes.

534 160
42½

1068
2136
for ½ - - - - 267
for 100 reis - - 10⅝
for 60 reis - - 6⅜

32)22712(709 12 reſult.
312
24
16

144
24

384
64
0

See the proof of this operation, page 177.

HAMBURGH ON SPAIN.

Reduce 452 ducats 17 ſueldos 6 dineros of exchange into marcs, ſhillings, and fenings lubs banco, at the exchange of 84 grotes Flemiſh banco per ducat of exchange.

EQUATION.

452 17 6 = x
1 ducat = 84 grotes
32 grotes = 1 marc.

RULE.

Multiply 452 17 6 by 84, price of exchange, and divide the product by 32 grotes.

452 17 6
84

1808
3616
for 10 ſueldos - 42
for 5 ditto - 21
for 2 do. 6 din. $10\frac{1}{2}$

32)$38041\frac{1}{2}$(1188 12 9 reſult.
60
284
281
25
16

158
25

408
88
24
12

288
0

To prove this operation, multiply 1188 12 9 by 32 grotes, and divide the product by 84, price of exchange.

HAMBURGH ON VIENNA.

Reduce 888 guldens 15 cruitzers into marcs, ſhillings, and fenings lubs banco, at the exchange of 204 guldens for 200 marcs lubs banco.

EQUATION.

888 15 = x

204 guldens = 200 marcs.

RULE.

Multiply 888 15 by 200 marcs, and divide by 204, price of exchange.

```
                         888 15
                         200
                       ------
                       177600
for 15 cruitzers  -        50
                       ------
                   204)177650(870 13 4 reſult.
                         1445
                          170
                           16
                         ----
                         1020
                         170
                         ----
                         2720
                          680
                           68
                           12
                         ----
                          136
                          68
                         ----
                          816
                            0
```

See the proof of this operation, page 239.

LEGHORN.

Monies of Exchange, and Regulations.

A pezza of 8 reals *(da otto reali)* = $5\frac{3}{4}$ lire moneta buona = 6 lire moneta lunga = 20 ſoldi or 240 denari of 8 reals.

A ſoldo of 8 reals = 12 denari of 8 reals.

A lira moneta buona and a lira moneta lunga are each divided into 20 ſoldi, and a ſoldo into 12 denari.

23 lire moneta buona = 24 lire moneta lunga.

Accounts are kept in pezze, ſoldi, and denari of 8 reals.

Value of uſances for bills drawn from

England and Portugal...........3 months after date.
Hamburgh, Holland, and Spain..2 months after date.
France..........................30 days after date.
Genoa, Milan, and Switzerland..8 days after ſight.

There are no days of grace; but bills of exchange are paid only on Mondays, Wedneſdays, and Fridays.

LEGHORN.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	49 pence ſterling	*for*	1 pezza of 8 reals.
Augſburgh	*giv.*	198 guldens current	*for*	100 pezze ditto.
Conſtantinople	*giv.*	138 paras	*for*	1 pezza ditto.
France	*giv.*	104 ſols in francs	*for*	1 pezza ditto.
Geneva	*giv.*	105 crowns current	*for*	100 pezze ditto.
Genoa	*giv.*	124 ſoldi fuori di banco	*for*	1 pezza ditto.
Hamburgh	*giv.*	86 grotes Flemiſh	*for*	1 pezza ditto.
Holland	*giv.*	92 grotes Flemiſh	*for*	1 pezza ditto.
Milan	*giv.*	125 ſoldi current	*for*	1 pezza ditto.
Naples	*giv.*	119 ducats di regno	*for*	100 pezze ditto.
Portugal	*giv.*	840 reis	*for*	1 pezza ditto.
Rome	*giv.*	117 bajocchi	*for*	$1\frac{1}{3}$ pezza ditto.
Sicily	*giv.*	12 tarins	*for*	1 pezza ditto.
Spain	*giv.*	140 dollars of exchange	*for*	100 pezze ditto.
Venice	*giv.*	12 lire piccole	*for*	1 pezza ditto.
Vienna	*rec.*	42 ſoldi moneta buona	*for*	1 gulden.

LEGHORN ON LONDON.

Reduce 132 pounds 17 ſhillings 6 pence ſterling into pezze, ſoldi, and denari of 8 reals, at the exchange of 48 pence ſterling per pezza of 8 reals.

EQUATION.

132 17 6 = x
1 pound = 240 pence
48 pence = 1 pezza.

RULE.

Reduce 132 17 6 into pence, and divide the product by 48, price of exchange.

132 17 6
20
2657
12
5320
2657
48)31890(664 7 6 reſult.
309
210
18
20
360
24
12
48
24
288
0

See the proof of this operation, page 48.

LEGHORN ON AMSTERDAM.

Reduce 1486 florins 18 ſtivers 8 penings banco into pezze, ſoldi, and denari of 8 reals, at the exchange of 88 grotes Flemiſh banco per pezza of 8 reals.

EQUATION.

1486 18 8 = x
1 florin = 40 grotes
88 grotes = 1 pezza.

RULE.

Multiply 1486 18 8 by 40 grotes, and divide by 88, price of exchange.

```
                  1486 18 8
                    40
                  ------
                  59440
for 10 ſtivers - -   20
for  8 ditto   - -   16
for  8 penings - -    1
                  ------
              88)59477(675 17 6 reſult.
                  667
                   517
                    77
                    20
                   ----
                  1540
                   660
                    44
                    12
                   ----
                    88
                   44
                   ----
                   528
                     0
```

See the proof of this operation, page 62.

LEGHORN ON FRANCE.

Reduce 3953 francs 95 cents into pezze, ſoldi, and denari of 8 reals, at the exchange of 104 ſols in francs per pezza of 8 reals.

EQUATION.

3953 95 = x
1 franc = 20 ſols
104 ſols = 1 pezza.

RULE.

Multiply 3953 95 by 20 ſols, and divide the product by 104, price of exchange.

3953 95
20
———
79060
for 95 cents - - 19
———
104)79079(760 7 6 reſult.
627
39
20
———
780
52
12
———
104
52
———
624
0

See the proof of this operation, page 107.

LEGHORN ON GENOA.

Reduce 227 pezze 6 ſoldi 8 denari fuori di banco into pezze, ſoldi, and denari of 8 reals, at the exchange of 124 ſoldi fuori di banco per pezza of 8 reals.

EQUATION.

227 6 8 = x
1 pezza = 115 ſoldi
124 ſoldi = 1 pezza.

RULE.

Multiply 227 6 8 by 115 ſoldi, and divide the product by 124, price of exchange.

227 6 8
115
1135
227
227
for 4 ſoldi - - 23
for 2 ditto - - 11 10
for 8 denari - 3 16 8
124)26143 6 8(210 16 8 reſult.
134
103
20
2066
826
82
12
172
82
992
0

See the proof of this operation, page 126.

LEGHORN ON HAMBURGH.

Reduce 931 marcs 8 ſhillings 9 fenings lubs banco into pezze, ſoldi, and denari of 8 reals, at the exchange of 84 grotes Flemiſh banco per pezza of 8 reals.

EQUATION.

931 8 9 = x
1 marc = 32 grotes
84 grotes = 1 pezza.

RULE.

Multiply 931 8 9 by 32 grotes, and divide the product by 84, price of exchange.

931 8 9
32

1862
2793
for 8 ſhillings - 16
for 9 fenings - $1\frac{1}{2}$

84)29809$\frac{1}{2}$(354 17 6 reſult.
460
409
73
20

1470
630
42
12

84
42

504
0

See the proof of this operation, page 139.

LEGHORN ON NAPLES.

Reduce 215 ducats 35 grains di regno into pezze and ſoldi of 8 reals, at the exchange of 118 ducats di regno for 100 pezze of 8 reals.

EQUATION.

$$215\ 35 = x$$

$$118 \text{ ducats} = 100 \text{ pezze.}$$

RULE.

Multiply 215 35 by 100 pezze, and divide the product by 118, price of exchange.

```
          215 35
          100
         ------
118)21535(182 10 reſult.
       973
        295
         59
         20
        ----
        1180
           0
```

See the proof of this operation, page 166.

LEGHORN ON PORTUGAL.

Reduce 635775 reis into pezze, ſoldi, and denari of 8 reals, at the exchange of 840 reis per pezza of 8 reals.

EQUATION.

$$\begin{array}{rcl} & 635775 = & x \\ 840 \text{ reis} = & & 1 \text{ pezza.} \end{array}$$

RULE.

Divide 635775 by 840, price of exchange.

840)635775(756 17 6 reſult.
4777
5775
735
20
―――
14700
6300
420
12
―――
840
420
―――
5040
0

See the proof of this operation, page 178.

LEGHORN ON SICILY.

Reduce 1576 ounces 20 tarins into pezze, ſoldi, and denari of 8 reals, at the exchange of 12 tarins per pezza of 8 reals.

EQUATION.

1576 20 = x
1 ounce = 30 tarins
12 tarins = 1 pezza.

RULE.

Multiply 1576 20 by 30 tarins, and divide the product by 12, price of exchange.

```
        1576 20
          30
      ---------
  12)47300(3941  13 4 reſult.
    113
      50
       20
        8
       20
      ----
      160
       40
        4
       12
      ----
       48
        0
```

See the proof of this operation, page 191.

LEGHORN ON SPAIN.

Reduce 327 dollars 2 reals of plate into pezze, ſoldi, and denari of 8 reals, at the exchange of 136 dollars of exchange for 100 pezze of 8 reals.

EQUATION.

$$327\ 2 = x$$
$$136 \text{ dollars} = 100 \text{ pezze.}$$

RULE.

Multiply 327 2 by 100 pezze, and divide the product by 136, price of exchange.

327 2
100

32700
for 2 reals - - - 25

136)32725(240 12 6 reſult.
552
85
20

1700
340
68
12

136
68

816
0

See the proof of this operation; page 202.

LEGHORN ON VENICE.

Reduce 2342 lire 16 ſoldi 3 denari piccoli into pezze, ſoldi, and denari of 8 reals, at the exchange of 11 lire 18 ſoldi piccoli per pezza of 8 reals.

EQUATION.

2342 16 3 = x
11 lire 18 ſoldi = 1 pezza.

RULE.

Divide 2342 16 3 by 11 18, price of exchange.

11 18	2342 16 3
20 fraction	20 fraction
238 div.	238)46856 5(196 17 6 reſult.

2305
1636
208
20

4165
1785
119
12

238
119

1428
0

See the proof of this operation, page 233.

LEIPSIC AND DRESDEN.

Monies of Exchange, and Regulations.

A rixdollar = 1½ gulden or 24 good groſhen.
A gulden = 16 good groſhen.
A groſh = 12 fenings.
2 rixdollars = 3 florins.

Accounts are kept in rixdollars, groſhen, and fenings.

The value of uſance is generally 14 days after acceptance, and there are no days of grace.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	6½ rixdollars	*for*	1 pound ſterling.
Amſterdam	*rec.*	144 rixdollars	*for*	100 rixdollars banco.
Dantzic	*rec.*	98 rixdollars	*for*	100 rixdollars.
France	*rec.*	79 rixdollars	*for*	300 livres tournois.
Hamburgh	*rec.*	149 rixdollars	*for*	100 rixdollars banco.
Vienna	*rec.*	77 rixdollars	*for*	100 rixdollars.

LEIPSIC ON LONDON.

Reduce 230 pounds 15 ſhillings 6 pence ſterling into rixdollars, groſhen, and fenings current, at the exchange of 6½ rixdollars current per pound ſterling.

EQUATION.

230 15 6 = x
1 pound = 6½ rixdollars.

RULE.

Multiply 230 15 6 by 6½, price of exchange.

230 15 6
6½

1380
for ½ - - - - 115
for 10 ſhillings - 3 6
for 5 ditto - - 1 15
for 6 pence - - 3 $10\frac{8}{10}$

1500 0 $10\frac{8}{10}$ reſult.

To prove this operation, divide 1500 0 $10\frac{8}{10}$ by 6½, price of exchange.

LEIPSIC ON FRANCE.

Reduce 2437 livres 17 ſols 6 deniers tournois into rixdollars, groſhen, and fenings current, at the exchange of 78 rixdollars current for 300 livres tournois.

EQUATION.

$$\begin{aligned} 2437\ 17\ 6 &= x \\ 300 \text{ livres} &= 78 \text{ rixdollars.} \end{aligned}$$

RULE.

Multiply 2437 17 6 by 78, price of exchange, and divide the product by 300 livres.

```
                           2437  17  6
                             78
                          ------------
                          19496
                         17059
for 10 ſols   -  -          39
for  5 ditto     -          19  12
for  2 do. 6 den.            9  18
                          ------------
                     300)190154   6(633  20  4  reſult.
                          1015
                           1154
                            254
                             24
                           -----
                           1022
                           508
                           -----
                           6102
                            102
                             12
                           -----
                           1224
                             24
```

To prove this operation, multiply 633 20 4 by 300 livres, and divide the product by 78, price of exchange.

LEIPSIC ON HAMBURGH.

Reduce 3768 marcs lubs banco into rixdollars, groſhen, and fenings current, at the exchange of 148 rixdollars current for 100 rixdollars banco.

EQUATION.

3768 = x
3 marcs = 1 rixdollar
100 rixdollars = 148 rixdollars.

RULE.

Multiply 3768 by 148, price of exchange, and divide the product by 300, fixed number.

```
      3768
       148
     -----
     30144
    15072
    3768
    ------
300)557664(1858 21 1 reſult.
    2576
     1766
      2664
       264
        24
      ----
      1056
      528
      ----
      6336
       336
        36
        12
       ---
       432
       132
```

To prove this operation, multiply 1858 21 1 by 300, fixed number, and divide the product by 148, price of exchange.

MALTA.

Monies of Exchange, and Regulations.

A crown *(Scudo)* = 12 tarins or 240 grains.
A tarin.......... = 20 grains.
Accounts are kept in crowns, tarins, and grains.

Malta exchanges with London by crowns, and gives 1 crown for 50 pence ſterling, more or leſs.

Reduce 120 pounds ſterling into crowns, at the exchange of 50 pence ſterling per crown.

EQUATION.

$$\begin{aligned} 120 \text{ pounds} &= x \\ 1 \text{ pound} &= 240 \text{ pence} \\ 50 \text{ pence} &= 1 \text{ crown.} \end{aligned}$$

RULE.

Multiply 120 by 240 pence, and divide the product by 50, price of exchange.

```
         120
         240
        ————
        4800
        240
      ——————
  50)28800(576 reſult.
        380
         300
           0
```

To prove this operation, multiply 576 by 50, price of exchange, and divide the product by 240 pence.

MILAN.

Monies of Exchange, and Regulations.

A lira current = 20 ſoldi current.
A ſoldo current = 12 denari current.
A lira imperiale = 20 ſoldi or 240 denari.
A Philip = 106 ſoldi imperiali or 7½ lire current.
A crown - = 117 ſoldi imperiali.
15 lire current = 212 ſoldi ditto.
150 ſoldi current = 106 ſoldi ditto.
Accounts are kept in lire, ſoldi, and denari current.

No days of grace are allowed.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	31 lire current	*for*	1 pound ſterling.
Amſterdam	*rec.*	57 ſoldi ditto	*for*	1 florin banco.
Augſburgh	*rec.*	66 ſoldi ditto	*for*	1 gulden current.
France	*rec.*	55 ſoldi imperiali	*for*	3 francs.
Genoa	*rec.*	86 ſoldi current	*for*	4 lire fuori di banco.
Hamburgh	*rec.*	49 ſoldi ditto	*for*	1 marc lubs banco.
Leghorn	*rec.*	135 ſoldi ditto	*for*	1 pezza of 8 reals.
Naples	*rec.*	104 ſoldi ditto	*for*	1 ducat di regno.
Rome	*rec.*	138 ſoldi ditto	*for*	1 crown current.
Idem	*giv.*	78 gold crowns	*for*	100 crowns.

MILAN ON LONDON.

Reduce 150 pounds 10 ſhillings 6 pence ſterling into lire, ſoldi, and denari current, at the exchange of 31 lire 15 ſoldi current per pound ſterling.

EQUATION.

150 10 6 = x
1 pound = 31 lire 15 ſoldi.

RULE.

Multiply 150 10 6 by 31 15, price of exchange.

	150	10	6
	31	15	
	150		
	450		
for 10 ſoldi - -	75		
for 5 ditto - -	37	10	
for 10 ſhillings -	15	17	6
for 6 pence - -		15	10½
	4779	3	4½ reſult.

To prove this operation, divide 4779 3 4½ by 31 15, price of exchange.

MILAN ON FRANCE.

Reduce 4675 francs 75 cents into lire, ſoldi, and denari current, at the exchange of 56 ſoldi imperiali for 3 francs.

EQUATION.

4675 75 = x
3 francs = 56 ſoldi imperiali
212 ſoldi imper. = 15 lire current.

RULE.

Multiply 4675 75 by 56, price of exchange, and by 5, fixed number; divide the product by 212, fixed number.

4675 75
56

28050
23375
for 75 cents - - 42

261842
5

---

212)1309210(6175 10 4 reſult.
372
1601
1170
110
20

2200
80
12

960
112

To prove this operation, multiply 6175 10 4 by 212, fixed number; divide the product by 5, fixed number, and by 56, price of exchange.

NAPLES.

Monies of Exchange, and Regulations.

A ducat di regno = 10 carlins or 100 grains.
A carlin........ = 10 grains.
Accounts are kept in ducats and grains di regno.

The value of uſance for bills drawn from London is 3 months after date.

There are three days of grace.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	42 pence ſterling	*for*	1 ducat di regno.
Amſterdam	*rec.*	51 grains	*for*	1 florin banco.
France	*giv.*	87 ſols tournois	*for*	1 ducat ditto.
Genoa	*giv.*	107 ſoldi fuori di banco	*for*	1 ducat ditto:
Hamburgh	*rec.*	45 grains	*for*	1 marc lubs banco.
Leghorn	*rec.*	118 ducats di regno	*for*	100 pezze of 8 reals.
Portugal	*giv.*	650 reis	*for*	1 ducat di regno.
Rome	*rec.*	124 ducats di regno	*for*	100 crowns.
Sicily	*rec.*	120 ducats ditto	*for*	100 crowns of 12 tarins.
Spain	*rec.*	88 grains	*for*	1 dollar of exchange.
Venice	*giv.*	200 ſoldi piccoli	*for*	1 ducat di regno.
Vienna	*rec.*	43 grains	*for*	1 gulden.

NAPLES ON LONDON.

Reduce 158 pounds 9 ſhillings 3 pence ſterling into ducats and grains, at the exchange of 37½ pence per ducat di regno.

EQUATION.

158 9 3 = x
1 pound = 240 pence
37½ pence = 1 ducat.

RULE.

Reduce 158 9 3 into pence, and divide the product by 37½, price of exchange.

37½	158 9 3
2 fraction	20
75 div.	3169
	12
	6341
	3169
	38031
	2 fraction

75)76062(1014 16 reſult.
106
312
12
100
1200
450
0

See the proof of this operation, page 49.

NAPLES ON GENOA.

Reduce 1345 lire 8 ſoldi 9 denari fuori di banco into ducats and grains, at the exchange of 104½ ſoldi fuori di banco per ducat di regno.

EQUATION.

1345 8 9 = x
1 lira = 20 ſoldi
104½ ſoldi = 1 ducat.

RULE.

Multiply 1345 8 9 by 20 ſoldi, and divide the product by 104½, price of exchange.

104½	1345 8 9
2 fraction	20
209 div.	26908 15
	2 fraction

209)53817½(257 50 reſult.
1201
1567
104
100

10450
0

See the proof of this operation, page 127.

NAPLES ON LEGHORN.

Reduce 182 pezze 10 ſoldi of 8 reals into ducats and grains, at the exchange of 118 ducats di regno for 100 pezze of 8 reals.

EQUATION.

182 10 = x
100 pezze = 118 ducats.

RULE.

Multiply 182 10 by 118, price of exchange, and divide the product by 100 pezze.

```
                    182 10
                    118
                   ------
                   1456
                   182
                  182
for 10 ſoldi  - -    59
                 -------
         1,00)215,35(215 35 reſult.
```

See the proof of this operation, page 150.

NAPLES ON SICILY.

Reduce 1548 ounces 15 tarins into ducats and grains, at the exchange of 120 ducats di regno per 100 crowns.

EQUATION.

1548 15 = x
2 ounces = 5 crowns
100 crowns = 120 ducats.

RULE.

Multiply 1548 15 by 120, price of exchange, and divide the product by 40, fixed number.

1548 15
120
———
30960
1548
for 15 tarins - - 60
———
4,0)18582,0(4645 50 reſult.
25
18
22
2
100
———
200
00

See the proof of this operation, page 192.

PETERSBURGH AND RUSSIA.

Monies of Exchange, and Regulations.

A rouble = 10 grieveners or 100 copecs.
Accounts are kept in roubles and copecs.

There are no days of grace.

N. B. The Julian Calendar is ſtill in uſe in Ruſſia, and therefore 12 days muſt be added to the date of bills from Ruſſia to make up the difference between the old and new ſtyle: for inſtance, a bill drawn on the firſt of September from Peterſburgh upon London at 100 days of date, becomes due, incluſive of the 3 days of grace, on the 24th of December.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	31½ pence ſterling	*for*	1 rouble.
Amſterdam	*giv.*	29½ ſtivers banco	*for*	1 ditto.
France	*giv.*	63 ſols tournois	*for*	1 ditto.
Hamburgh	*giv.*	26¾ ſhillings lubs banco	*for*	1 ditto.
Vienna	*giv.*	103 cruitzers	*for*	1 ditto.

PETERSBURGH ON LONDON.

Reduce 115 pounds 6 ſhillings 3 pence ſterling into roubles and copecs, at the exchange of 31½ pence ſterling per rouble.

EQUATION.

115 6 3 = x
1 pound = 240 pence
31½ pence = 1 rouble.

RULE.

Reduce 115 6 3 into pence, and divide the product by 31½, price of exchange.

31½ 115 6 3
2 fraction 20
63 div. 2306
12
4615
2306
27675
2 fraction
63)55350(878 57 reſult,
495
540
36
100
3600
450
9

To prove this operation, multiply 878 57 by 31½, price of exchange, and divide the product by 240 pence.

PETERSBURGH ON AMSTERDAM.

Reduce 422 florins 17 ſtivers 8 penings banco into roubles and copecs, at the exchange of 29½ ſtivers banco per rouble.

EQUATION.

422 17 8 = x
1 florin = 20 ſtivers
29½ ſtivers = 1 rouble.

RULE.

Multiply 422 17 8 by 20 ſtivers, and divide the product by 29½, price of exchange.

29½	422 17 8
2 fraction	20
59 div.	8457½
	2 fraction

59)16915(286 69 reſult.
511
395
41
100

4100
560
29

To prove this operation, multiply 286 69 by 29½, price of exchange, and divide the product by 20 ſtivers.

PETERSBURGH ON HAMBURGH.

Reduce 346 marcs 8 ſhillings lubs banco into roubles and copecs, at the exchange of $26\frac{3}{4}$ ſhillings lubs banco per rouble.

EQUATION.

346 8 = x
1 marc = 16 ſhillings
$26\frac{3}{4}$ ſhillings = 1 rouble.

RULE.

Multiply 346 8 by 16 ſhilings, and divide the product by $26\frac{3}{4}$, price of exchange.

$26\frac{3}{4}$	346 8
4 fraction	16
——	——
107 div.	2076
	346
for 8 ſhillings - -	8
	——
	5544
	4 fraction
	——
	107)22176(207 25 reſult.
	776
	27
	100
	——
	2700
	560
	25

To prove this operation, multiply 207 25 by $26\frac{3}{4}$, price of exchange, and divide the product by 16 ſhillings.

PORTUGAL.

Monies of Exchange, and Regulations.

A cruſade of exchange = 400 reis.

Accounts are kept in reis, and the three right hand figures are ſeparated by a croſſed cipher.

Value of uſances for bills drawn from

England	30 days after ſight.
France	60 days after date.
Amſterdam and Hamburgh	2 months after date.
Italy	3 months after date.
Spain	15 days after ſight.

N. B. Payments are made in Portugal in legal money *(moeda legal)*, that is, one half in effective money, and the remainder in paper money.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	66 pence ſterling	*for*	1000 reis.
Amſterdam	*giv.*	45 grotes Flemiſh	*for*	1 cruſade.
France	*rec.*	470 reis	*for*	3 francs.
Genoa	*rec.*	764 reis	*for*	1 pezza fuori di banco.
Hamburgh	*giv.*	43 grotes Flemiſh	*for*	1 cruſade.
Leghorn	*rec.*	810 reis	*for*	1 pezza of 8 reals.
Naples	*rec.*	660 reis	*for*	1 ducat di regno.
Spain	*rec.*	2350 reis	*for*	1 piſtole of exchange.
Venice	*rec.*	66 reis	*for*	1 lira piccola.

PORTUGAL ON LONDON.

Reduce 147 pounds 12 ſhillings 6 pence ſterling into reis, at the exchange of 62½ pence ſterling per milreis.

EQUATION.

$$
\begin{aligned}
& 147\ 12\ 6 = x \\
1 \text{ pound} &= 240 \text{ pence} \\
62\tfrac{1}{2} \text{ pence} &= 1000 \text{ reis.}
\end{aligned}
$$

RULE.

Reduce 147 12 6 into pence; multiply by 1000, and divide the product by 62½, price of exchange.

62½	147 12 6
2 fraction	20
125 div.	2952
	12
	5910
	2952
	35430
	1000
	35430000
	2 fraction

125)70860000(566880 reſult.
836
860
1100
1000
00

See the proof of this operation, page 50.

PORTUGAL ON AMSTERDAM.

Reduce 753 florins 3 ſtivers 12 penings banco into reis, at the exchange of 45 grotes Flemiſh banco per cruſade of 400 reis.

EQUATION.

753 3 12 = x
1 florin = 40 grotes
45 grotes = 400 reis.

RULE.

Multiply 753 3 12 by 16000, fixed number, and divide the product by 45, price of exchange.

753 3 12
16000

4518000
753
for 2 ſtivers - 1600
for 1 ditto - 800
for 12 penings 600

[200 reis.
45)12051000(267800 reſult = 669 cruſades
305
351
360
000

See the proof of this operation, page 63.

PORTUGAL ON FRANCE.

Reduce 885 francs 75 cents into reis, at the exchange of 460 reis for 3 francs.

EQUATION.

885 75 = x

3 francs = 460 reis.

RULE.

Multiply 885 75 by 460 price of exchange, and divide the product by 3 francs.

885 75

460

53100

3540

for 50 cents - 230

for 25 cents - 115

3)407445(135815 reſult.

10

17

24

04

15

0

See the proof of this operation, page 108.

PORTUGAL ON GENOA.

Reduce 317 pezze 16 ſoldi 6 denari fuori di banco into reis, at the exchange of 720 reis per pezza of 5¾ lire fuori di banco.

EQUATION.

317 16 6 = x

1 pezza = 720 reis.

RULE.

Multiply 317 16 6 by 720, price of exchange.

317 16 6

720

6340

2219

for 10 ſoldi - - 360

for 5 ditto - - 180

for 1 ſoldo - - 36

for 6 denari - 18

228834 reſult.

See the proof of this operation, page 128.

PORTUGAL ON HAMBURGH.

Reduce 709 marcs 12 ſhillings lubs banco into reis, at the exchange of 42½ grotes Flemiſh banco per cruſade of 400 reis.

EQUATION.

709 12 = x
1 marc = 32 grotes
42½ grotes = 400 reis.

RULE.

Multiply 709 12 by 12800, fixed number, and divide the product by 42½, price of exchange.

42½ 709 12
2 fraction 12800

85 div. 567200
1418
709
for 8 ſhillings 6400
for 4 ditto - 3200

9084800
2 fraction

[160 reis.
85)18169600(213760 reſult = 534 cruſades
116
319
646
510
00

See the proof of this operation, page 140.

PORTUGAL ON LEGHORN.

Reduce 756 pezze 17 ſoldi 6 denari of 8 reals into reis, at the exchange of 840 reis per pezza of 8 reals.

EQUATION.

756 17 6 = x
1 pezza = 840 reis.

RULE.

Multiply 756 17 6 by 840, price of exchange.

756 17 6
840

30240
6048
for 10 ſoldi - - 420
for 5 ditto - - 210
for 2 do. 6 den. 105

635775 reſult.

See the proof of this operation, page 151.

PORTUGAL ON SPAIN.

Reduce 450 dollars 3 reals 9 maravedis of plate into reis, at the exchange of 2256 reis per piſtole of exchange.

EQUATION.

450 3 9 = x
4 dollars = 1 piſtole
1 piſtole = 2256 reis.

RULE.

Multiply 450 3 9 by 2256 reis, and divide the product by 4 dollars.

```
                 450 3 9
                2256
                ----
                2700
               2250
               900
              900
for 2 reals  - -  564
for 1 real   - -  282
for 9 maravedis    74
            -------
          4)1016120
            -------
             254030 reſult.
```

See the proof of this operation, page 203.

PORTUGAL.

Reduction of effective money into legal money.

Reduce 6400 reis, effective money, into reis, legal money, at 13 per cent diſcount.

EQUATION.

$$6400 = x$$
$$93\tfrac{1}{2}\text{ reis effective} = 100\text{ reis legal money.}$$

RULE.

Multiply 6400 by 100, and divide the product by 93½, that is, by 100 leſs half the diſcount.

93½	6400
2 fraction	100
187 div.	640000
	2 fraction

$$187)1280000(6844\tfrac{172}{187}\text{ reſult.}$$

1580
840
920
172

See the proof of this operation in the following page.

To underſtand the principle of this rule, we ſhould obſerve that, as what is called the legal money is half effective money and half paper money, it follows, that, in making a payment in effective money, the whole diſcount which obtains upon paper money ſhould be allowed upon one half of the ſum paid, which is tantamount to calculating one half of the diſcount upon the whole ſum.

PORTUGAL.

Reduction of legal money into effective money.

Reduce 6844 reis, legal money, into reis, effective money, at 13 per cent diſcount.

EQUATION.

6844 = x

100 reis legal money = 93½ reis effective money.

RULE.

Multiply 6844 by 93½, that is, by 100 leſs half the diſcount, and divide the product by 100.

	6844
	93½
	20532
	61596
for ½ - - - - - -	3422
for $\frac{172}{187}$, remainder of the preceding operation -	86
	1,00)6400,00(6400 reſult.

See the proof of this operation in the preceding page.

By the reaſon alluded to in the preceding operation, it is evident, that, to reduce legal money into effective money, only half of the diſcount is to be deducted.

PORTUGAL.

Reduction of paper money into legal money.

Reduce 126200 reis, paper money, into reis, legal money, at $8\frac{1}{2}$ per cent diſcount.

EQUATION.

$126200 = x$

100 reis paper money = $91\frac{1}{2}$ reis effective money

$95\frac{3}{4}$ reis effective money = 100 reis legal money.

RULE.

Multiply 126200 by $91\frac{1}{2}$, that is, by 100 leſs the whole diſcount, and divide the product by $95\frac{3}{4}$, that is, by 100 leſs half the diſcount.

$95\frac{3}{4}$	126200
4 fraction	$91\frac{1}{2}$
383 div.	126200
	1135800
for $\frac{1}{2}$ - - -	63100
	11547300
	4 fraction

383)46189200(120598$\frac{166}{383}$ reſult.
788
2292
3770
3230
166

See the proof of this operation in the following page.

By comparing, in this operation, 100 reis, paper money, with 100 reis effective, leſs the whole diſcount upon paper money, we reduce the ſum into effective money; and by afterwards comparing 100 reis effective, leſs half the ſame diſcount, with 100 reis legal money, we complete the reduction of paper money into legal money.

PORTUGAL.

Reduction of legal money into paper money.

Reduce 120598 reis, legal money, into reis, paper money, at 8½ per cent diſcount.

EQUATION.

120598 = x
100 reis legal money = 95¾ reis effective money
91½ reis effective money = 100 reis paper money.

RULE.

Multiply 120598 by 95¾, that is, by 100 leſs half the diſcount, and divide the product by 91½, that is, by 100 leſs the total diſcount.

91½	120598
2 fraction	95¾
183 div.	602990
	1085382
for ½ - - - - - -	60299
for ¼ - - - - - -	30149½
for $\frac{166}{383}$, remainder of the preceding operation	41½
	11547300
	2 fraction

183)23094600(126200 reſult.
479
1134
366
000

See the proof of this operation in the preceding page.

In this operation, as we compare 100 with 100 leſs half the diſcount, we reduce the legal money into effective, and, by afterwards comparing 100, leſs the whole diſcount, with 100, we reduce the effective into paper money.

REVEL ON LONDON.

Monies of Exchange, and Regulations.

A rouble = 10 grieveners or 100 copecs.
Accounts are kept in roubles and copecs.

N. B. The old ſtyle is ſtill in uſe at Revel. See *Peterſburgh.*

Reduce 156 pounds 10 ſhillings ſterling into roubles and copecs, at the exchange of 7 roubles 50 copecs per pound ſterling.

EQUATION.

156 10 = x
1 pound = 7 roubles 50 copecs.

RULE.

Multiply 156 10 by 7 50, price of exchange.

```
                       156 10
                         7 50
                  ------------
                      1092
for 50 copecs    -      78
for 10 ſhillings -       3 75
                  ------------
                      1173 75 reſult.
```

To prove this operation, divide 1173 75 by 7 50, price of exchange.

RIGA ON LONDON.

Monies of Exchange, and Regulations.

A rixdollar Albert = 90 groſhen or 80 ferdings.
Accounts are kept in rixdollars and ferdings.

Reduce 347 pounds 17 ſhillings 6 pence ſterling into rixdollars and ferdings, at the exchange of 408 groſhen per pound ſterling.

EQUATION.

347 17 6 = x
1 pound = 408 groſhen
90 groſhen = 1 rixdollar.

RULE.

Multiply 347 17 6 by 408, price of exchange, and divide the product by 90 groſhen.

```
                      347  17  6
                      408
                    ------
                     2776
                    13880
for 10 ſhillings  -   204
for  5 ditto   -  -   102
for  2 do. 6 pence     51
                    ------
              90)141933(1577  2  reſult.
                   519
                    693
                     633
                       3
                      80
                    ----
                     240
                      60
```

To prove this operation, multiply 1577 2 by 90 groſhen, and divide the product by 408, price of exchange.

ROME.

Monies of Exchange, and Regulations.

A crown current *(ſcudo moneta)* = 10 paoli or 100 bajocchi.

A gold crown *(ſcudo di ſtampa de oro)* = 20 ſoldi = 240 denari or $152\frac{3}{10}$ bajocchi.

1000 gold crowns = 1523 crowns current.

Accounts are kept in crowns current and bajocchi.

There are no days of grace.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	51 pence ſterling	*for*	1 crown current.
Idem	*rec.*	48 paoli	*for*	1 pound ſterling.
Amſterdam	*rec.*	44 bajocchi	*for*	1 florin banco.
France	*giv.*	105 ſols in francs	*for*	1 crown current.
Genoa	*giv.*	124 ſoldi fuori di banco.	*for*	1 crown current.
Hamburgh	*rec.*	37 bajocchi	*for*	1 marc lubs banco.
Leghorn	*rec.*	98 bajocchi	*for*	1 pezza of 8 reals.
Liſbon	*giv.*	1220 reis	*for*	1 gold crown.
Milan	*rec.*	81 gold crowns	*for*	100 crowns.
Naples	*giv.*	122 ducats di regno	*for*	100 crowns current.
Spain	*giv.*	560 maravedis of plate	*for*	1 gold crown.
Idem	*giv.*	112 reals ditto	*for*	10 crowns current.

ROME ON LONDON.

Reduce 1236 pounds 12 ſhillings 6 pence ſterling into crowns current and bajocchi, at the exchange of 52 pence ſterling per crown current.

EQUATION.

1236 12 6 = x

1 pound = 240 pence

52 pence = 1 crown.

RULE.

Reduce 1236 12 6 into pence, and divide the product by 52, price of exchange.

```
   1236 12 6
     20
  ------
  24732
     12
  ------
  49470
 24732
 ------
52)296790(5707 50 reſult.
    367
      390
       26
      100
     -----
     2600
       00
```

To prove this operation, multiply 5707 50 by 52, price of exchange, and divide the product by 240 pence.

SICILY.

Monies of Exchange, and Regulations.

An ounce *(onza)* = 30 tarins or 600 grains.
A tarin......... = 2 carlins or 20 grains.
A crown *(ſcudo)* = 12 tarins or 240 grains.
5 crowns = 2 ounces.
Accounts are kept in ounces, tarins, and grains.

There are no days of grace.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London..........	*rec*....	59 tarins................	*for*...	1 pound ſterling.
Amſterdam.......	*rec*....	5½ tarins................	*for*...	1 florin banco.
France...........	*rec*....	50 grains...............	*for*...	1 livre tournois.
Genoa	*rec*....	40 grains...............	*for*...	1 lira fuori di banco.
Leghorn..........	*rec*....	12½ tarins..	*for*...	1 pezza of 8 reals.
Naples	*giv*....	120 ducats di regno ...	*for*...	100 crowns.
Portugal	*rec*....	6¼ tarins...............	*for*...	1 cruſade of 400 reis.
Rome	*rec*....	12½ tarins..............	*for*...	1 crown current.
Spain	*rec*....	8¾ tarins................	*for*...	1 dollar of exchange.

SICILY ON LONDON.

Reduce 546 pounds 17 ſhillings 6 pence ſterling into ounces, tarins, and grains, at the exchange of 58 tarins per pound ſterling.

EQUATION.

546 17 6 = x
1 pound = 58 tarins
30 tarins = 1 ounce.

RULE.

Multiply 546 17 6 by 58, price of exchange, and divide the product by 30 tarins.

546 17 6
58
4368
2730
for 10 ſhillings 29
for 5 ditto - 14 15
for 2 do. 6 pence 7 7 10
30)31718 22 10(1057 8 15 reſult.
171
218
8
30
262
22
20
450
150
0

To prove this operation, multiply 1057 8 15 by 30 tarins, and divide the product by 58, price of exchange.

SICILY ON GENOA.

Reduce 6742 lire 10 ſoldi fuori di banco into ounces, tarins, and grains, at the exchange of 41 grains per lira fuori di banco.

EQUATION.

6742 10 = x
1 lira = 41 grains.
600 grains = 1 ounce.

RULE.

Multiply 6742 10 by 41, price of exchange, and divide the product by 600 grains.

6742 10
41
———
6742
26968
for 10 ſoldi - - 20½
———
600)276442½(460 22 2 reſult.
3644
442
30
———
13275
1275
75
20
———
1500
300

To prove this operation, multiply 460 22 2 by 600 grains, and divide the product by 41, price of exchange.

SICILY ON LEGHORN.

Reduce 3941 pezze 13 ſoldi 4 denari of 8 reals into ounces and tarins, at the exchange of 12 tarins per pezza of 8 reals.

EQUATION.

3941 13 4 = x

1 pezza = 12 tarins

30 tarins = 1 ounce.

RULE.

Multiply 3941 13 4 by 12, price of exchange, and divide the product by 30 tarins.

3941 13 4

12

7882

3941

for 10 ſoldi - - 6

for 3 ditto 4 den. 2

30)47300(1576 20 reſult.

173

230

200

20

See the proof of this operation, page 152.

SICILY ON NAPLES.

Reduce 4645 ducats 50 grains into ounces and tarins, at the exchange of 120 ducats di regno for 100 crowns.

EQUATION.

4645 50 = x
120 ducats = 100 crowns
5 crowns = 2 ounces.

RULE.

Multiply 4645 50 by 40, fixed number, and divide the product by 120, price of exchange.

```
                       4645 50
                         40
                     ------
                     185800
for 50 grains    -       20
                  ----------
               12,0)18582,0(1548 15 reſult.
                    658
                     58
                     102
                       6
                      30
                     ---
                     180
                      60
                       0
```

See the proof of this operation, page 167.

SPAIN.

Monies of Exchange.

A dollar of exchange *(peſo de cambio)* = 8 reals of plate = 15 reals 2 maravedis of vellon = 272 maravedis of plate = 512 maravedis of vellon = 10 reals of Valencia, or 1 libra 8 ſueldos catalanes.

A piſtole of exchange *(doblon de cambio)* = 4 dollars of exchange = 32 reals of plate = 1088 maravedis of plate = 2048 maravedis of vellon = 40 reals of Valencia, or 5 libras 12 ſueldos catalanes.

A ducat of exchange *(ducado de cambio)* = 375 maravedis of plate, or $705\frac{15}{17}$ maravedis of vellon.

An eſcudo de oro = 5 dollars of exchange = 40 reals of plate, or 75 reals 10 maravedis of vellon.

A dollar, and a ducat, of exchange, are each divided into 20 ſueldos, and a ſueldo into 12 dineros.

A real of plate and a real of vellon are each divided into 34 maravedis.

272 ducats of exchange = 375 dollars of exchange.
272 ditto............ = 525 libras catalanes.
289 ditto............ = 6000 reals of vellon.
85 dollars of exchange = 64 hard dollars.
5 ditto............ = 7 libras catalanes.
17 ditto............ = 256 reals of vellon.
17 eſcudos de oro..... = 1280 ditto
17 piſtoles of exchange = 1024 ditto
34 reals of plate...... = 64 reals of vellon.

SPAIN.

Regulations.

Accounts are kept at Cadiz and Seville in reals and maravedis of plate; at Madrid, Malaga, Bilboa, and St. Sebaſtian, in reals and maravedis of vellon; at Valencia, in peſos, ſueldos, and dineros; and at Barcelona, in libras, ſueldos, and dineros.

At Madrid and Seville, the value of uſance for bills drawn from England, France, and Italy, is 60 days after date; from Amſterdam and Hamburgh, 2 months after date; and there are 14 days of grace allowed only for bills accepted.

At Cadiz, the value of uſance for bills drawn from France is 1 month after date, and from other countries 60 days after date. There are 6 days of grace.

At Bilboa, the value of uſance for bills drawn from France is 1 month, and from other countries 2 months after date. There are 14 days of grace.

N. B. By the regulation of the Board of Trade, "*Conſulado*," No. 26, Chapter 13, thoſe merchants in Spain receiving firſts of bills of exchange, for acceptance, the ſeconds of which may not have been preſented till after the firſts may have become due, are required, under their own reſponſibility, to cauſe the amount of ſuch bills to be depoſited by the parties drawn upon, in order to be transferred, at a future time, to the holders of the ſeconds. The merchants who may have procured the acceptance have then a right to one half per cent upon the amount of the depoſit, which is paid to them by the holders of the ſeconds.

SPAIN.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*giv.*	36 pence ſterling	*for*	1 dollar of exchange.
Amſterdam	*giv.*	88 grotes Flemiſh	*for*	1 ducat of exchange.
France	*giv.*	15 livres tournois	*for*	1 piſtole of exchange.
Idem	*giv.*	76 ſols tournois	*for*	1 dollar of exchange.
Genoa	*rec.*	127 dollars of exchange	*for*	100 pezze fuori di banco.
Idem	*giv.*	22 lire fuori di banco	*for*	1 eſcudo de oro.
Hamburgh	*giv.*	84 grotes Flemiſh	*for*	1 ducat of exchange.
Leghorn	*rec.*	136 dollars of exchange	*for*	100 pezze of 8 reals.
Naples	*rec.*	315 maravedis of plate	*for*	1 ducat di regno.
Portugal	*giv.*	2300 reis	*for*	1 piſtole of exchange.

Vales Reales preſently circulating in Spain, by an order of the government, in date of the 30th Auguſt 1800, are of three different iſſues or creations. They bear an intereſt of 4 per cent per annum; and their intrinſic value, independently of the intereſt which may be due upon them, is as follows:

	Dollars		Reals	Maravedis
Vales Reales for	600	are worth	9035	10 of vellon
	300		4517	22 ditto
	150		2258	28 ditto.

The paper money in queſtion is only transferable by indorſement, and it is required by law that it be received in payment to the full amount of its nominal value. As, however, it experiences a greater, or leſs, depreciation, it is neceſſary, in drawing upon Spain for effective money, to inſert the words "*payable in effective*" in the body of the bill, which might otherwiſe be paid in vales.

SPAIN ON LONDON.

Reduce 391 pounds 1 ſhilling 3 pence ſterling into dollars, reals, and maravedis of plate, at the exchange of 35½ pence ſterling per dollar of exchange.

EQUATION.

391 1 3 = x
1 pound = 240 pence
35½ pence = 1 dollar.

RULE.

Reduce 391 1 3 into pence, and divide the product by 35½, price of exchange.

35½	391 . 1 3
2 fraction	20
71 div.	7821 3
	12
	15645
	7821
	93855
	2 fraction

71)187710(2643 6 14 reſult.
457
311
270
57
8
456
30
34
1020
310
26

See the proof of this operation, page 52.

SPAIN ON AMSTERDAM.

Reduce 640 florins banco into dollars, reals, and maravedis of plate, at the exchange of 88 grotes Flemiſh banco per ducat of exchange.

EQUATION.

640 = x
1 florin = 40 grotes
88 grotes = 1 ducat
272 ducats = 375 dollars.

RULE.

Multiply 640 by 1875, fixed number; divide the product by 34, fixed number, multiplied by 88, price of exchange.

34
88
272
272
2992 div.

640
1875
3200
4480
5120
640

2992)1200000(401 0 18 reſult.
3200
208
8
1664
34
6656
4992
56576
26656
2720

To prove this operation, multiply 401 0 18 by 88, price of exchange, and by 34, fixed number; divide the product by 1875, fixed number.

SPAIN ON FRANCE.

Reduce 2702 livres 14 ſols tournois into dollars and reals of plate, at the exchange of 14 livres 8 ſols tournois per piſtole of exchange.

EQUATION.

2702 14 = x
14 livres 8 ſols = 1 piſtole
1 piſtole = 4 dollars.

RULE.

Multiply 2702 14 by 4 dollars, and divide the product by 14 8, price of exchange.

14 8	2702 14
20 fraction	4
288 div.	10808
for 10 ſols - -	2
for 4 ditto -	16
	10810 16
	20 fraction

288)216216(750 6 reſult.
1461
216
8
1728
0

See the proof of this operation, page 109.

SPAIN ON FRANCE.

Reduce 1105 livres 11 ſols 3 deniers tournois into dollars, reals, and maravedis of plate, at the exchange of 76 ſols tournois per dollar of exchange.

EQUATION.

1105 11 3 = x
1 livre = 20 ſols
76 ſols = 1 dollar.

RULE.

Multiply 1105 11 3 by 20 ſols, and divide the product by 76, price of exchange.

1105 11 3
20

76)22111¼(290 7 17 reſult.
691
71
8

570
38
34

152
114

1292
532
0

See the proof of this operation, page 110.

SPAIN ON GENOA.

Reduce 192 pezze 14 ſoldi 2 denari fuori di banco into dollars, reals, and maravedis of plate, at the exchange of 126 dollars of exchange for 100 pezze of $5\frac{3}{4}$ lire fuori di banco.

EQUATION.

192 14 2 = x
100 pezze = 126 dollars.

RULE.

Multiply 192 14 2 by 126, price of exchange, and divide the product by 100 pezze.

192 14 2
126

1152
384
192
for 10 ſoldi - - 63
for 4 ditto - - 25 4
for 2 denari - 1 1

1,00)242,81 $\frac{1}{4}$(242 6 17 reſult.
8

6,50
34

17,00

To prove this operation, multiply 242 6 17 by 100 pezze, and divide the product by 126, price of exchange.

SPAIN ON HAMBURGH.

Reduce 854 marcs 4 ſhillings lubs banco into dollars of plate, at the exchange of $83\frac{3}{4}$ grotes Flemiſh banco per ducat of exchange.

EQUATION.

854 4 = x
1 marc = 32 grotes
$83\frac{3}{4}$ grotes = 1 ducat
272 ducats = 375 dollars.

RULE.

Multiply 854 4 by 750, fixed number; divide the product by 17, fixed number, and by $83\frac{3}{4}$, price of exchange.

	17		854 4
	$83\frac{3}{4}$		750
	51		42700
	136		5978
for $\frac{3}{4}$	$12\frac{3}{4}$	for 4 ſhill.	$187\frac{1}{2}$
	$1423\frac{3}{4}$		$640687\frac{1}{2}$
	4 fraction		4 fraction
	5695 div.		5695)2562750(450 reſult.
			28475
			00

To prove this operation, multiply 450 by 17, fixed number, and by $83\frac{3}{4}$, price of exchange; divide the product by 750, fixed number.

SPAIN ON LEGHORN.

Reduce 240 pezze 12 ſoldi 6 denari of 8 reals into dollars and reals of plate, at the exchange of 136 dollars of exchange per 100 pezze of 8 reals.

EQUATION.

240 12 6 = x

100 pezze = 136 dollars.

RULE.

Multiply 240 12 6 by 136, price of exchange, and divide the product by 100 pezze.

```
                        240  12  6
                        136
                        ----
                       1440
                       720
                      240
for 10 ſoldi  -  -      68
for  2 do. 6 den.       17
                      ------
              1,00)327,25(327  2 reſult.
                        8
                      ----
                      2,00
```

See the proof of this operation, page 153.

SPAIN ON PORTUGAL.

Reduce 254030 reis into dollars, reals, and maravedis of plate, at the exchange of 2256 reis per piſtole of exchange.

EQUATION.

254030 = x
2256 reis = 1 piſtole
1 piſtole = 4 dollars.

RULE.

Multiply 254030 by 4 dollars, and divide the product by 2256, price of exchange.

254030
4
2256)1016120(450 3 8 reſult.
11372
920
8
7360
592
34
2368
1776
20128
2080

See the proof of this operation, page 179.

SPAIN.

Reduction of reals of plate into reals of vellon.

Reduce 42602 reals 17 maravedis of plate into reals and maravedis of vellon.

EQUATION.

42602 17 = x

34 reals of plate = 64 reals of vellon.

RULE.

Multiply 42602 17 by 64, and divide the product by 34.

```
                 42602 17
                    64
                 --------
                 170408
                255612
for 17 marav.  -     32
               ----------
             34)2726560(80192 32 reſult.
                 065
                  316
                   100
                    32
```

N. B. Always place the remainder in the quotient as ſo many maravedis, ſince its multiplication by 34 and diviſion by the ſame number cannot occaſion any alteration.

Dollars of exchange are reduced into reals of plate by multiplying by 8.

See the proof of this operation in the following page.

SPAIN.

Reduction of reals of vellon into reals of plate.

Reduce 80192 reals 32 maravedis of vellon into reals and maravedis of plate.

EQUATION.

```
                     80192 32 = x
64 reals of vellon =       34 reals of plate.
```

RULE.

Multiply 80192 32 by 34, and divide the product by 64.

```
                      80192 32
                         34
                      -------
                      320768
                     240576
for 32 marav.   -         32
                     --------
                64)2726560(42602 17 reſult.
                    166
                     385
                       160
                        32
                        34
                       ----
                       128
                       96
                       ----
                      1088
                       448
                         0
```

N. B. Always bring down the maravedis in the product by the reaſon alluded to in the preceding page.

See the proof of this operation in the preceding page.

SPAIN.

Reduction of ducats of exchange into dollars of exchange.

Reduce 795 ducats 14 ſueldos 8 dineros of exchange into dollars, reals, and maravedis of plate.

EQUATION.

795 14 8 = x
272 ducats = 375 dollars.

RULE.

Multiply 795 14 8 by 375, and divide the product by 272.

795 14 8
375
———
3975
5565
2385
for 10 ſueldos - 187½
for 4 ditto - 75
for 8 dineros - 12½
———
272)298400(1097 0 16 reſult.
2640
1920
16
8
———
128
34
———
512
384
———
4352
1632
0

See the proof of this operation in the following page.

SPAIN.

Reduction of dollars of exchange into ducats of exchange.

Reduce 1097 dollars 16 maravedis of plate into ducats, ſueldos, and dineros of exchange.

EQUATION.

```
               1097  0  16 = x
375 dollars  =  272 ducats.
```

RULE.

Multiply 1097 0 16 by 272, and divide the product by 375.

```
                    1097  0  16
                     272
                    ----
                    2194
                   7679
                  2194
for 16 marav. -       16
                 -------
            375)298400(795  14  8  reſult.
                  3590
                   2150
                    275
                     20
                   ----
                   5500
                   1750
                    250
                     12
                   ----
                    500
                   250
                   ----
                   3000
                      0
```

See the proof of this operation in the preceding page.

SPAIN.

Reduction of vales reales into effective money.

Reduce 19036 reals 17 maravedis vales reales into reals and maravedis effective money, at 48 per cent diſcount.

EQUATION.

19036 17 = x
100 reals vales = 52 reals effective.

RULE.

Multiply 19036 17 by 52, that is, by 100 leſs the diſcount, and divide the product by 100.

19036 17
52

38072
95180
for 17 maravedis 26

1,00)9898,98(9898 33 reſult.
34

392
294

33,32

See the proof of this operation in the following page.

SPAIN.

Reduction of effective money into vales reales.

Reduce 9898 reals 33 maravedis effective money into reals and maravedis vales reales, at 48 per cent diſcount.

EQUATION.

9898 33 = x
52 reals effective = 100 reals vales.

RULE.

Multiply 9898 33 by 100, and divide the product by 52, that is, by 100 leſs the diſcount.

9898 33
100
———
989800
for 17 maravedis - 50
for 16 ditto - - 47 2
———
52)989897 2(19036 16 reſult.
469
189
337
25
34
———
102
75
———
852
332
20

See the proof of this operation in the preceding page.

STOCKHOLM AND GOTTENBURGH.

Monies of Exchange, and Regulations.

A rixdollar ſpecie... = 48 ſkillings.
A ſkilling.............. = 12 fenings.

Accounts are kept in rixdollars, ſkillings, and fenings.

The value of uſance is 1 month after acceptance.

There are 6 days of grace, which are not allowed for bills at ſight.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	4½ rixdollars	*for*	1 pound ſterling.
Amſterdam	*rec.*	44 ſkillings	*for*	1 rixdollar banco.
Copenhagen	*rec.*	36 ſkillings	*for*	1 rixdollar.
Dantzic	*rec.*	9½ ſkillings	*for*	1 florin current.
France	*rec.*	24 ſkillings	*for*	3 livres tournois.
Hamburgh	*rec.*	47 ſkillings	*for*	1 rixdollar banco.
Leghorn	*rec.*	40 ſkillings	*for*	1 pezza of 8 reals.
Liſbon	*rec.*	21 ſkillings	*for*	1 cruſade of 400 reis.
Spain	*rec.*	42 ſkillings	*for*	1 ducat of exchange.

STOCKHOLM ON LONDON.

Reduce 328 pounds 17 ſhillings 6 pence ſterling into rixdollars and ſkillings, at the exchange of 4½ rixdollars per pound ſterling.

EQUATION.

328 17 6 = x
1 pound = 4½ rixdollars.

RULE.

Multiply 328 17 6 by 4½, price of exchange.

328 17 6
4½

	1312	
for ½ - - -	164	
for 10 ſhillings -	2	12
for 5 ditto - -	1	6
for 2 do. 6 pence		27
	1479	45 reſult.

To prove this operation, divide 1479 45 by 4½, price of exchange.

STOCKHOLM ON AMSTERDAM.

Reduce 587 florins 17 ſtivers 8 penings banco into rixdollars, ſkillings, and fenings, at the exchange of 44 ſkillings per rixdollar banco.

EQUATION.

587 17 8 = x
2½ florins = 1 rixdollar
1 rixdollar = 44 ſkillings
48 ſkillings = 1 rixdollar.

RULE.

Multiply 587 17 8 by 44, price of exchange, and divide the product by 120, fixed number.

587 17 8
44
2348
2348
for 10 ſtivers - 22
for 7 do. 8 penings 16½
120)25866½(215 26 7 reſult.
186
666
66
48
552
264
3192
792
72
12
864
24

To prove this operation, multiply 215 26 7 by 120, fixed number, and divide the product by 44, price of exchange.

STOCKHOLM ON HAMBURGH.

Reduce 786 marcs 12 ſhillings lubs banco into rixdollars, ſkillings, and fenings, at the exchange of 46 ſkillings for 1 rixdollar banco.

EQUATION.

786 12 = x
3 marcs = 1 rixdollar
1 rixdollar = 46 ſkillings
48 ſkillings = 1 rixdollar.

RULE.

Multiply 786 12 by 46, price of exchange, and divide the product by 144, fixed number.

786 12
46

4716
3144
for 12 ſhillings 34½

---

144)36190½(251 15 6 reſult.
739
190
46
48

392
184

2232
792
72
12

864
0

To prove this operation, multiply 251 15 6 by 144, fixed number, and divide the product by 46, price of exchange.

SWITZERLAND.

Monies of Exchange, and Regulations.

A crown or rixdollar = 3 livres = 1⅘ florin or 108 cruitzers.

A livre = 20 ſols or 36 cruitzers.
A ſol = 6 deniers.
A florin = 33⅓ ſols or 60 cruitzers.
A cruitzer = 5 penins.
5 rixdollars of exchange = 9 florins of exchange.
3 florins ditto................. = 5 livres ditto.
2 ditto.......................... = 5 livres tournois.
81 ditto......................... = 200 francs.
2 livres of exchange..... = 3 livres tournois.
27 ditto......................... = 40 francs.

Accounts are kept in livres, ſols, and deniers of exchange, and in florins and cruitzers of exchange.

Bills are generally drawn upon Switzerland at ſo many days after date, or after ſight.

There are no days of grace.

SWITZERLAND.

Courſe of Exchange.

	Uncertain Prices.	Certain Prices.
London	*rec*...16 livres	*for*...1 pound ſterling.
Amſterdam	*rec*...152 livres	*for*...100 florins banco.
Idem	*rec*...143 livres	*for*...100 florins current.
Augſburgh	*rec*...172 livres	*for*...100 guldens current.
France	*rec*...99 livres	*for*...100 livres.
Francfort	*rec*...98 florins	*for*...100 guldens current.
Genoa	*rec*...64½ ſols	*for*...1 pezza fuori di banco.
Hamburgh	*rec*...127 livres	*for*...100 marcs lubs banco.
Leghorn	*rec*...68 ſols	*for*...1 pezza of 8 reals.
Milan	*rec*...51½ livres	*for*...100 lire current.
Vienna	*rec*...130 livres	*for*...100 guldens.

N. B. Switzerland exchanges by exchange money, 9 pieces of which are equivalent with 10 pieces current money.

The exchange between France and Switzerland is at ſo much per cent.

SWITZERLAND ON LONDON.

Reduce 188 pounds 7 ſhillings 6 pence ſterling into livres, ſols, and deniers, at the exchange of 16 livres 4 ſols per pound ſterling.

EQUATION.

188 7 6 = x
1 pound = 16 livres 4 ſols.

RULE.

Multiply 188 7 6 by 16 4, price of exchange.

	188	7	6
	16	4	
	1128		
	188		
for 4 ſols - -	37	12	
for 5 ſhillings -	4	1	
for 2 ditto 6 pence	2	0	6
	3051	13	6 reſult.

To prove this operation, divide 3051 13 6 by 16 4, price of exchange.

SWITZERLAND ON AMSTERDAM.

Reduce 365 florins 15 ſtivers banco into livres, ſols, and deniers, at the exchange of 152 livres 10 ſols for 100 florins banco.

EQUATION.

```
                     365 15 = x
100 florins    =     152 livres 10 ſols.
```

RULE.

Multiply 365 15 by 152 10, price of exchange, and divide the product by 100 florins.

```
                           365 15
                           152 10
                           ------
                           730
                         1825
                         365
for 10 ſols      -   -     182 10
for 10 ſtivers       -      76  5
for  5 ditto         -      38  2 6
                         -----------
             1,00)557,76 17 6(557 15 4 reſult.
                            20
                          ----
                          15,37
                             12
                          ----
                             80
                            37
                          ----
                           4,50
```

To prove this operation, multiply 557 15 4 by 100 florins, and divide the product by 152 10, price of exchange.

SWITZERLAND ON HAMBURGH.

Reduce 213 marcs 17 ſhillings 6 fenings lubs banco into livres, ſols, and deniers, at the exchange of 128 livres for 100 marcs lubs banco.

EQUATION.

213 17 6 = x
100 marcs = 128 livres.

RULE.

Multiply 213 17 6 by 128, price of exchange, and divide the product by 100 marcs.

213 17 6
128

1704
426
213
for 10 ſhillings 64
for 5 ditto - - 32
for 2 do. 6 fenings 16

1,00)273,76(273 15 2 reſult.
20

15,20
12

2,40

To prove this operation, multiply 273 15 2 by 100 marcs, and divide the product by 128, price of exchange.

TRIESTE.

Monies of Exchange, and Regulations.

A rixdollar = 1½ gulden or 60 cruitzers.
A gulden = 60 cruitzers or 240 fenings.
Accounts are kept in guldens and cruitzers.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	12 guldens	*for*	1 pound ſterling.
Amſterdam	*rec*	177 rixdollars	*for*	100 rixdollars current.
Augſburgh	*rec.*	130 guldens	*for*	100 guldens.
Conſtantinople	*rec.*	75 guldens	*for*	100 piaſtres.
France	*rec.*	30 cruitzers	*for*	1 franc.
Genoa	*giv.*	47 ſoldi fuori di banco	*for*	1 gulden.
Hamburgh	*rec.*	194 guldens	*for*	200 marcs lubs banco.
Leghorn	*rec.*	2⅔ guldens	*for*	1 pezza of 8 reals.
Milan	*giv.*	51 ſoldi current	*for*	1 gulden.
Naples	*giv.*	45 grains	*for*	1 gulden.
Rome	*rec.*	2¾ guldens	*for*	1 crown current.
Sicily	*rec.*	6⅓ guldens	*for*	1 ounce.
Venice	*giv.*	11½ ſoldi piccoli	*for*	1 gulden.

TRIESTE ON LONDON.

Reduce 896 pounds 17 ſhillings 6 pence ſterling into guldens and cruitzers, at the exchange of 12 guldens 15 cruitzers per pound ſterling.

EQUATION.

896 17 6 = x
1 pound = 12 guldens 15 cruitzers.

RULE.

Multiply 896 17 6 by 12 15, price of exchange.

	896	17 6
	12	15
	1792	
	896	
for 15 cruitzers	224	
for 10 ſhillings	6	$7\frac{4}{8}$
for 5 ditto -	3	$3\frac{5}{8}$
for 2 do. 6 pence	1	$31\frac{7}{8}$
	10986	$43\frac{1}{8}$ reſult.

To prove this operation, divide 10986 $43\frac{1}{8}$ by 12 15, price of exchange.

TRIESTE ON GENOA.

Reduce 985 pezze 10 ſoldi fuori di banco into guldens and cruitzers, at the exchange of 47 ſoldi fuori di banco per gulden.

EQUATION.

985 10 = x
1 pezza = 115 ſoldi
47 ſoldi = 1 gulden.

RULE.

Multiply 985 10 by 115 ſoldi, and divide the product by 47, price of exchange.

985 10
115
―――
4925
985
985
for 10 ſoldi - - 57½
―――
47)113332½(2411 19 reſult.
193
53
62
15
60
―――
930
460
37

To prove this operation, multiply 2411 19 by 47, price of exchange, and divide the product by 115 ſoldi.

TRIESTE ON LEGHORN.

Reduce 1236 pezze 17 ſoldi 6 denari of 8 reals into guldens and cruitzers, at the exchange of 2 guldens 40 cruitzers per pezza of 8 reals.

EQUATION.

1236 17 6 = x

1 pezza = 2 guldens 40 cruitzers.

RULE.

Multiply 1236 17 6 by 2 40, price of exchange.

	1236	17 6
	2	40
	2472	
for 20 cruitzers -	412	
for 20 ditto - -	412	
for 10 ſoldi - -	1	20
for 5 ditto - -		40
for 2 ditto 6 den.		20
	3298	20 reſult.

To prove this operation, divide 3298 20 by 2 40, price of exchange.

TRIESTE ON NAPLES.

Reduce 1538 ducats 75 grains di regno into guldens and cruitzers, at the exchange of 45 grains per gulden.

EQUATION.

1538 75 = x
1 ducat = 100 grains
45 grains = 1 gulden.

RULE.

Multiply 1538 75 by 100 grains, and divide the product by 45, price of exchange.

```
          1538 75
           100
          -------
   45)153875(3419 26 reſult.
        188
         87
         425
          20
          60
         ----
         1200
          300
           30
```

To prove this operation, multiply 3419 26 by 45, price of exchange, and divide the product by 100 grains.

TURIN.

Monies of Exchange, and Regulations.

A lira = 20 ſoldi or 240 denari.
A ſoldo = 12 denari.
Accounts are kept in lire, ſoldi, and denari.

The uſance of bills drawn from London is 3 months, from Amſterdam 2 months, and from France 1 month after date.

There are 5 days of grace; but bills may be proteſted the day after they are due.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	19½ lire	*for*	1 pound ſterling.
Amſterdam	*rec.*	37 ſoldi	*for*	1 florin banco.
Augſburgh	*rec.*	42 ſoldi	*for*	1 gulden current.
France	*rec.*	20 lire	*for*	24 livres tournois.
Geneva	*rec.*	82 ſoldi	*for*	1 crown current.
Genoa	*rec.*	9⅖ lire	*for*	1 zecchino.
Leghorn	*rec.*	86 ſoldi	*for*	1 pezza of 8 reals.
Milan	*rec.*	92 ſoldi	*for*	1 Philip.
Rome	*rec.*	87 ſoldi	*for*	1 crown current.
Vienna	*rec.*	32½ ſoldi	*for*	1 gulden.

TURIN ON LONDON.

Reduce 346 pounds 8 ſhillings 4 pence ſterling into lire, ſoldi, and denari, at the exchange of 19 lire 15 ſoldi per pound ſterling.

EQUATION.

346 8 4 = x
1 pound = 19 lire 15 ſoldi.

RULE.

Multiply 346 8 4 by 19 15, price of exchange.

	346	8	4
	19	15	
	3114		
	346		
for 10 ſoldi - -	173		
for 5 ditto - -	86	10	
for 8 ſhillings -	7	18	
for 4 pence -		6	7
	6841	14	7 reſult.

To prove this operation, divide 6841 14 7 by 19 15, price of exchange.

TURIN ON FRANCE.

Reduce 6826 livres 15 ſols tournois into lire, ſoldi, and denari, at the exchange of 19½ lire per 24 livres tournois.

EQUATION.

6826 15 = x

24 livres = 19½ lire.

RULE.

Multiply 6826 15 by 19½, price of exchange, and divide the product by 24 livres.

6826 15
19½

61434
6826
for ½ - - - - 3413
for 10 ſols - - 9 15
for 5 ditto - - 4 17 6

24)133121 12 6(5546 14 8 reſult.
131
112
161
17
20

352
112
16
12

198
6

To prove this operation, multiply 5546 14 8 by 24 livres, and divide the product by 19½, price of exchange.

VENICE.

Monies of Exchange, and Regulations.

A lira piccoli = 20 ſoldi or 240 denari piccoli.
A ſoldo piccoli = 12 denari piccoli.
Accounts are kept in lire, ſoldi, and denari piccoli.

The value of uſance for bills drawn from London is 3 months after date; from Amſterdam, Hamburgh, France, and Spain, 2 months after date.

There are 6 days of grace, excluſive of Sundays and holidays.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	56 lire piccoli	*for*	1 pound ſterling.
Amſterdam	*rec.*	4 lire 18 ſoldi	*for*	1 florin banco.
Augſburgh	*rec.*	4 lire 17 ſoldi	*for*	1 gulden.
Conſtantinople	*rec.*	3 lire 6 ſoldi	*for*	1 piaſtre.
France	*rec.*	2 lire 5 ſoldi	*for*	1 franc.
Genoa	*rec.*	38 ſoldi	*for*	1 lira fuori di banco.
Hamburgh	*rec.*	4 lire 6 ſoldi	*for*	1 marc lubs banco.
Leghorn	*rec.*	11 lire 18 ſoldi	*for*	1 pezza of 8 reals.
Milan	*rec.*	34 ſoldi	*for*	1 lira current.
Naples	*rec.*	9 lire 18 ſoldi	*for*	1 ducat di regno.
Portugal	*giv.*	66 reis	*for*	1 lira piccoli.
Rome	*rec.*	12 lire 10 ſoldi	*for*	1 crown current.
Vienna	*rec.*	4 lire 8 ſoldi	*for*	1 gulden.

VENICE ON LONDON.

Reduce 250 pounds 11 ſhillings 3 pence ſterling into lire, ſoldi, and denari piccoli, at the exchange of 59 lire piccoli per pound ſterling.

EQUATION.

250 11 3 = x
1 pound = 59 lire.

RULE.

Multiply 250 11 3 by 59, price of exchange.

250 11 3
59

2250
1250
for 10 ſhillings - 29 10
for 1 ditto - - 2 19
for 3 pence - - 14 9

14783 3 9 reſult.

See the proof of this operation, page 53.

VENICE ON AMSTERDAM.

Reduce 2476 florins 12 ſtivers 8 penings banco into lire, ſoldi, and denari piccoli, at the exchange of 4 lire 18 ſoldi piccoli per florin banco.

EQUATION.

2476 12 8 = x
1 florin = 4 lire 18 ſoldi.

RULE.

Multiply 2476 12 8 by 4 18, price of exchange.

	2476	12	8
	4	18	
	9904		
for 10 ſoldi - -	1238		
for 4 ditto - -	495	4	
for 4 ditto - -	495	4	
for 10 ſtivers -	2	9	
for 2 do. 8 penings		12	3
	12135	9	3 reſult.

To prove this operation, divide 12135 9 3 by 4 18, price of exchange.

VENICE ON FRANCE.

Reduce 3675 francs 50 cents into lire and ſoldi piccoli, at the exchange of 2 lire 4 ſoldi piccoli per franc.

EQUATION.

3675 50 = x
1 franc = 2 lire 4 ſoldi.

RULE.

Multiply 3675 50 by 2 4, price of exchange.

```
                          3675  50
                             2   4
                          --------
                          7350
for  4 ſoldi   - -         735
for 50 cents   - -           1   2
                          --------
                          8086   2 reſult.
```

To prove this operation, divide 8086 2 by 2 4, price of exchange.

VENICE ON GENOA.

Reduce 958 lire 6 ſoldi 8 denari fuori di banco into lire, ſoldi, and denari piccoli, at the exchange of 38 ſoldi piccoli per lira fuori di banco.

EQUATION.

958 6 8 = x
1 lira = 38 ſoldi
20 ſoldi = 1 lira.

RULE.

Multiply 958 6 8 by 38, price of exchange, and divide the product by 20 ſoldi.

	958	6	8
	38		
	7664		
	2874		
for 5 ſoldi - -	9	10	
for 1 ſoldo - -	1	18	
for 8 denari - -	1	5	4
	20)36416	13	4
	1820	16	8 reſult.

See the proof of this operation, page 131.

VENICE ON HAMBURGH.

Reduce 5486 marcs 12 ſhillings lubs banco into lire, ſoldi, and denari piccoli, at the exchange of 4 lire 6 ſoldi piccoli per marc lubs banco.

EQUATION.

5486 12 = x
1 marc = 4 lire 6 ſoldi.

RULE.

Multiply 5486 12 by 4 6, price of exchange.

	5486	12	
	4	6	
	21944		
for 4 ſoldi - -	1097	4	
for 2 ditto - -	548	12	
for 8 ſhillings -	2	3	
for 4 ditto - -	1	1	6
	23593	0	6 reſult.

To prove this operation, divide 23593 0 6 by 4 6, price of exchange.

VENICE ON LEGHORN.

Reduce 196 pezze 17 ſoldi 6 denari of 8 reals into lire, ſoldi, and denari piccoli, at the exchange of 11 lire 18 ſoldi piccoli per pezza of 8 reals.

EQUATION.

196 17 6 = x

1 pezza = 11 lire 18 ſoldi.

RULE.

Multiply 196 17 6 by 11 18, price of exchange.

	196	17	6	
	11	18		
	196			
	196			
for 10 ſoldi - -	98			
for 8 ditto - -	78	8		
for 10 ſoldi - -	5	19		
for 5 ditto - -	2	19	6	
for 2 ditto 6 denari	1	9	9	
	2342	16	3	reſult.

See the proof of this operation, page 154.

VENICE ON NAPLES.

Reduce 585 ducats 75 grains into lire, ſoldi, and denari piccoli, at the exchange of 9 lire 16 ſoldi piccoli per ducat di regno.

EQUATION.

585 75 = x.

1 ducat = 9 lire 16 ſoldi.

RULE.

Multiply 585 75 by 9 16, price of exchange.

	585	75
	9	16
	5265	
for 10 ſoldi - -	292	10
for 5 ditto - -	146	5
for 1 ſoldo - -	29	5
for 50 grains - -	4	18
for 25 ditto - -	2	9
	5740	7 reſult.

To prove this operation, divide 5740 7 by 9 16, price of exchange.

VIENNA AND PRAGUE.

Monies of Exchange, and Regulations.

A rixdollar = $1\frac{1}{2}$ gulden or 90 cruitzers.
A gulden = 60 cruitzers or 240 fenings.
Accounts are kept in guldens and cruitzers.

The value of uſance is 14 days after acceptance.

There are 3 days of grace, which are not allowed for bills at ſight.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	12 guldens 30 cruitzers	*for*	1 pound ſterling.
Amſterdam	*rec.*	186 rixdollars	*for*	100 rixdollars banco.
Idem	*giv.*	$25\frac{1}{2}$ ſtivers banco	*for*	1 rixdollar.
Augſburgh	*rec.*	130 guldens	*for*	100 guldens current.
Conſtantinople	*rec.*	73 guldens	*for*	100 piaſtres.
France	*rec.*	31 cruitzers	*for*	1 livre tournois.
Genoa	*giv.*	47 ſoldi fuori di banco	*for*	1 gulden.
Hamburgh	*rec.*	199 guldens	*for*	200 marcs lubs banco.
Leghorn	*giv.*	43 ſoldi moneta buona	*for*	1 gulden.
Naples	*rec.*	128 cruitzers	*for*	1 ducat di regno.
Spain	*rec.*	258 guldens	*for*	100 ducats of exchange.
Venice	*giv.*	4 lire 5 ſoldi	*for*	1 gulden.

VIENNA ON LONDON.

Reduce 313 pounds 8 ſhillings ſterling into guldens and cruitzers, at the exchange of 12 guldens 40 cruitzers per pound ſterling.

EQUATION.

313 8 = x
1 pound = 12 guldens 40 cruit.

RULE.

Multiply 313 8 by 12 40, price of exchange.

313 8
12 40

626
313
for 20 cruitzers - 104 20
for 20 ditto - - 104 20
for 4 ſhillings - 2 32
for 4 ditto - - 2 32

3969 44 reſult.

To prove this operation, divide 3969 .44 by 12 40, price of exchange.

VIENNA ON AMSTERDAM.

Reduce 666 florins 16 ſtivers 8 penings banco into guldens and cruitzers, at the exchange of 25½ ſtivers banco per rixdollar.

EQUATION.

666 16 8 = x
1 florin = 20 ſtivers
25½ ſtivers = 1 rixdollar
1 rixdollar = 1½ gulden.

RULE.

Multiply 666 16 8 by 30, fixed number, and divide the product by 25½, price of exchange.

25½ 666 16 8
2 fraction 30

51 div. 19980
for 10 ſtivers - - 15
for 5 ditto - - 7½
for 1 ditto - - 1½
for 8 penings - ¾

20004¾
2 fraction

51)40009½(784 30 reſult.
430
229
25
60

1530
00

See the proof of this operation, page 65.

VIENNA ON FRANCE.

Reduce 886 livres 12 ſols 6 deniers tournois into guldens and cruitzers, at the exchange of 32 cruitzers per livre tournois.

EQUATION.

886 12 6 = x
1 livre = 32 cruitzers
60 cruitzers = 1 gulden.

RULE.

Multiply 886 12 6 by 32, price of exchange, and divide the product by 60 cruitzers.

886 12 6
32

1772
2658
for 10 ſols - - 16
for 2 ſols 6 den. - 4

60)28372(472 52 reſult.
437
172
52

To prove this operation, multiply 472 52 by 60 cruitzers, and divide the product by 32, price of exchange.

VIENNA ON HAMBURGH.

Reduce 870 marcs 13 ſhillings 4 fenings lubs banco into guldens and cruitzers, at the exchange of 204 guldens for 200 marcs lubs banco.

EQUATION.

870 13 4 = x
200 marcs = 204 guldens.

RULE.

Multiply 870 13 4 by 204, price of exchange, and divide the product by 200 marcs.

870 13 4
204

3480
17400
for 8 ſhillings - 102
for 4 ditto - - 51
for 1 ditto - - $12\frac{3}{4}$
for 4 fenings - $4\frac{1}{4}$

200)177650(888 15 reſult.
1765
1650
50
60

3000
1000
0

See the proof of this operation, page 142.

VIENNA ON LEGHORN.

Reduce 542 pezze 16 ſoldi of 8 reals into guldens and cruitzers, at the exchange of 43 ſoldi moneta buona per gulden.

EQUATION.

542 16 = x
1 pezza = 115 ſoldi
43 ſoldi = 1 gulden.

RULE,

Multiply 542 16 by 115 ſoldi, and divide the product by 43, price of exchange.

542 16
115
2710
542
542
for 10 ſoldi - - 57 30
for 5 ditto - - 28 45
for 1 ditto - - 5 45
43)62422(1451 40 reſult.
194
222
72
29
60
1740
20

To prove this operation, multiply 1451 40 by 43, price of exchange, and divide the product by 115 ſoldi.

VIENNA ON NAPLES.

Reduce 156 ducats 75 grains into guldens and cruitzers, at the exchange of 128 cruitzers per ducat di regno.

EQUATION.

156 75 = x
1 ducat = 128 cruitzers
60 cruitzers = 1 gulden.

RULE.

Multiply 156 75 by 128, price of exchange, and divide the product by 60 cruitzers.

```
                    156 75
                    128
                    ------
                   1248
                   312
                  156
for 50 grains  -     64
for 25 ditto  -  -   32
                 --------
              60)20064(334 24 refult.
                   206
                    264
                     24
```

To prove this operation, multiply 334 24 by 60 cruitzers, and divide the product by 128, price of exchange.

THE UNITED STATES OF AMERICA.

Monies of Exchange, and Regulations.

A dollar = 100 cents.

Accounts are kept in dollars and cents.

Each dollar is rated at 4 ſhillings 6 pence ſterling at par; therefore

40 dollars = 9 pounds ſterling.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Amſterdam	*rec.*	37 cents	*for*	1 florin current.
Hamburgh	*rec.*	33½ cents	*for*	1 marc lubs banco.

N. B. America exchanges with London at par, or at ſo much per cent either above or under par. When the exchange is not at par, they reduce the ſterling into dollars, and add, or deduct, according to the circumſtance, the agio, that is, the difference between the par of exchange and the actual courſe.

THE UNITED STATES OF AMERICA.

Currencies, and their Par in Sterling.

A pound currency = 20 ſhillings or 240 pence.

In Georgia and South Carolina, a dollar is worth 4 ſhillings 6 pence currency; therefore

100 pounds currency = 100 pounds ſterling.

In New England and Virginia, a dollar is worth 6 ſhillings currency; therefore

$133\frac{1}{3}$ pounds currency = 100 pounds ſterling.

To reduce this currency into ſterling, multiply by 3, and divide by 4.

In Delaware, Maryland, New Jerſey, and Pennſylvania, a dollar is worth 7 ſhillings 6 pence currency; therefore

$166\frac{2}{3}$ pounds currency = 100 pounds ſterling.

To reduce this currency into ſterling, multiply by 3, and divide by 5.

In New York and North Carolina, a dollar is worth 8 ſhillings currency; therefore

$177\frac{7}{9}$ pounds currency = 100 pounds ſterling.

To reduce this currency into ſterling, multiply by 9, and divide by 16.

N. B. The ſeveral Provincial Currencies above mentioned are aboliſhed in the United States of America, and not any accounts, kept in thoſe monies, are admitted in the Courts of Juſtice: they are ſtill uſed, however, by the force of habit, in certain commercial tranſactions.

AMERICA ON LONDON.

Reduce 173 pounds 17 ſhillings 6 pence ſterling into dollars and cents at par.

EQUATION.

173 17 6 = x
9 pounds = 40 dollars.

RULE.

Multiply 173 17 6 by 40 dollars, and divide the product by 9 pounds.

173 17 6
40

6920
for 10 ſhillings - 20
for 5 ditto - - 10
for 2 do. 6 pence 5

9)6955(772 77$\frac{7}{9}$ reſult.
65
25
7
100

700
70
7

To prove this operation, multiply 772 77$\frac{7}{9}$ by 9, and divide the product by 40.

AMERICA ON AMSTERDAM.

Reduce 839 florins 15 ſtivers current into dollars and cents, at the exchange of 37 cents per florin current.

EQUATION.

839 15 = x
1 florin = 37 cents
100 cents = 1 dollar.

RULE.

Multiply 839 15 by 37, price of exchange, and divide the product by 100 cents.

```
                        839 15
                         37
                      ---------
                       5873
                      2517
for 10 ſtivers   -       18½
for  5 ditto  -  -        9¼
                    ---------
```

$1{,}00)310{,}70\frac{3}{4}(310\ 70\frac{3}{4}$ reſult.

To prove this operation, multiply 310 70¾ by 100 cents, and divide the product by 37, price of exchange.

AMERICA ON HAMBURGH.

Reduce 1236 marcs 12 ſhillings lubs banco into dollars and cents, at the exchange of 33½ cents per marc lubs banco.

EQUATION.

1236 12 = x
1 marc = 33½ cents
100 cents = 1 dollar.

RULE.

Multiply 1236 12 by 33½, price of exchange, and divide the product by 100 cents.

1236 12
33½

3708
3708
for ½ - - - - 618
for 8 ſhillings - 16¾
for 4 ditto - - 8⅜

1,00)414,31⅛(414 31⅛ reſult.

To prove this operation, multiply 414 31⅛ by 100 cents, and divide the product by 33½, price of exchange.

EAST INDIES.

Monies of Exchange.

BOMBAY.

A rupee ...... = 4 quarters or 400 reis.
A quarter..... = 100 reis.

CALCUTTA.

A rupee ...... = 16 annas or 192 pices.
An anna...... = 12 pices.
100 ſicca rupees = 116 current rupees.

MADRAS.

A pagoda..... = 36 fanams or 288 pices.
A fanam...... = 8 pices.

Courſe of Exchange.

		Uncertain Prices.		*Certain Prices.*
Bombay	*rec.*....	2 ſhillings 6 pence	*for*...	1 rupee.
Calcutta............	*rec.*....	2 ſhillings 8 pence	*for*...	1 ſicca rupee.
Madras	*rec.*....	8 ſhillings 9 pence	*for*...	1 ſtar pagoda.

Table of Exchange,

Ordered to be adopted for the Adjuſtment of the Calcutta Cuſtoms.

		Coins.		*Exchange.*
Great Britain.......	*giv*....	1 pound ſterling........	*for*...	10 ſicca rupees.
Denmark...........	*giv*....	1 rixdollar	*for*...	$2\frac{1}{4}$ ditto.
France	*giv*....	24 livres tournois	*for*...	10 ditto.
Ditto	*giv*....	48 Mauritius livres....	*for*...	10 ditto.
Spain	*giv*....	1 hard dollar...........	*for*...	$2\frac{1}{4}$ ditto.
Portugal	*giv*....	1000 reis	*for*...	$2\frac{3}{4}$ ditto.
China...............	*giv*....	1 tale	*for*...	$3\frac{1}{3}$ ditto.
Madras.............	*giv*....	1 ſtar pagoda...........	*for*...	$3\frac{3}{4}$ ditto.
America...........	*giv*....	1 dollar..................	*for*...	$2\frac{1}{4}$ ditto.

WEST INDIES ON LONDON.

Monies of Exchange.

A pound currency = 20 ſhillings or 240 pence.

Accounts are kept in pounds, ſhillings, and pence currency.

140 pounds currency = 100 pounds ſterling.

Reduce 573 pounds 12 ſhillings 6 pence ſterling into pounds, ſhillings, and pence currency, at the exchange of 140 pounds currency for 100 pounds ſterling.

EQUATION.

573 12 6 = x
100 pounds ſterling = 140 pounds currency.

RULE.

Multiply 573 12 6 by 140, price of exchange, and divide the product by 100 pounds.

```
                          573 12 6
                          140
                      ------------
                      22920
                      573
for 10 ſhillings  -      70
for  2 do. 6 pence       17  10
                      ---------
              1,00)803,07  10(803  1  6  reſult.
                        20
                      ----
                      1,50
                        12
                      ----
                      6,00
```

To prove this operation, multiply 803 1 6 by 100 pounds, and divide the product by 140, price of exchange.

OF THE

ARBITRATIONS OF EXCHANGE

BETWEEN LONDON

AND

THE PRINCIPAL PLACES

OF

EUROPE.

OF

ARBITRATIONS OF EXCHANGE.

AFTER having treated generally of the diviſion of monies, and given rules for the calculation of operations in exchange, it appears to me opportune to advert to the principles from which is deduced the mode of diſcovering the advantages reſulting from the combinations of ſeveral quotations of exchange. Such advantages originate in the variations to which exchanges are ſubject, either by political, financial, or commercial operations, which have naturally a contemporaneous influence on the balance of trade. In order to diſcover contingencies ſo very intereſting, arbitrations of exchange, which are the object of this part of my work, are uſed.

In the two following heads, I ſhall ſucceſſively lay down the principles upon which merchants ſpeculate in exchanges; the manner of executing banking orders ariſing from their ſpeculations; and, laſtly, the circulations adroitly created in this branch of buſineſs, for the purpoſe of retarding effective payments, or of carrying on ſpeculations by artificial funds. Whether this ſubject be conſidered under a political or a commercial point of view, the advantages and importance of the operations in queſtion will be obvious by the developement of the plan of the great circulation effected by exchanges, in the courſe of laſt year, upon occaſion of the ſubſidy paid by Spain to France, when the former not only derived a remarkable facility in the payment, but was even enabled to ſubſtitute artificial payments, till the arrival of the treaſures which ſhe expected from her colonies.

Arbitrations of exchange are calculations which merchants make, to find, by the combinations reſulting from ſeveral quotations of exchange, the proportional exchange between two places, through any intermediate place, whence is aſcertained the place which offers the moſt advantage either to remit or to draw; that is, whether it will anſwer, in the inſtance of a remittance, to purchaſe, upon the ſpot, a bill upon an intermediate place, to be ſent for negotiation to that place which is the ultimate object of the operation; or, in the inſtance of a draft, whether it will anſwer that a remittance ſhould be made from ſuch place to an intermediate place, upon which the amount might then be valued.

If the place where a merchant reſides gives the certain price to that with which he arbitrates, he ſhould, in remitting, make uſe of that intermediate place by which the higheſt exchange may be obtained; and the contrary in drawing. But, if the place where one is gives the uncertain price, it is eligible to remit by that place which eſtabliſhes the loweſt exchange, and vice verſâ in drawing.

Arbitrations are calculated, either by the rule of conjunction, or by the rule of equation.

PROPOSITION.

Let it be ſuppoſed that a bill on Hamburgh, taken in London at 34 ſhillings and 6 grotes Flemiſh banco per pound ſterling, be remitted to Liſbon, and negotiated at 44 grotes Flemiſh banco per cruſade of 400 reis;

what is the proportional exchange between London and Liſbon reſulting from ſuch negotiation? or, in other words, how many pence ſterling are diſburſed to obtain 1000 reis?

It is evident that Liſbon is the place with which London arbitrates, and that Hamburgh is the medium of the arbitration. The exchange of London upon Hamburgh is known by the quotation at London, as is the exchange of Liſbon upon Hamburgh by the quotation received from Liſbon: it remains, therefore, to be aſcertained, by the combination of thoſe two exchanges, whether the indirect courſe between London and Liſbon, reſulting from ſuch operation, be more advantageous than the direct, either to remit or to draw.

OPERATION

By the Rule of Conjunction.

STATEMENT.

Antecedents.		Conſequents.		Certain price.		Proport. exch.
400 reis	:	1 cruſade	::	1000 reis	:	$63\frac{5}{6}\frac{3}{9}$ pence.
1 cruſade	:	44 grotes				
12 grotes	:	1 ſhill. Flem.				
$34\frac{1}{2}$ ſhill. Flem.	:	1 pound ſterl.				
1 pound ſterl.	:	240 pence ſterl.				

In ſimilar ſtatements, the certain price of exchange is conſtantly the third term, and the quotient or fourth term is the uncertain price or proportional exchange reſulting from the operation. The firſt term of the antecedents is of the ſame nature as the certain price, and the laſt term of the conſequents is of the ſame denomination as the uncertain price, while the product of the extremes is equal to the product of the means. If, then, we inſert the third term, or certain price, as the firſt of the conſequents, and the fourth term, or uncertain price, as the firſt of the antecedents, both columns will be compoſed of quantities differently expreſſed, yet equal, which, when multiplied into each other, will give equivalent products, thus:

$63\frac{53}{69}$ pence	1000 reis
400 reis	1 cruſade
1 cruſade	44 grotes
12 grotes	1 ſhill. Flem.
$34\frac{1}{2}$ ſhill. Flem.	1 pound ſterl.
1 pound ſterl.	240 pence ſterl.

$$10560000 = 10560000$$

Hence it is evident that we may ſubſtitute to the preceding proportions their correſponding equations, by which means the operation is ſimplified as follows.

OPERATION BY THE RULE OF EQUATION.

We have ſeen that the certain price of exchange is conſtantly the third term of the proportion, which, in the correſponding equation, becomes the firſt term of the dividend; therefore, in order to reſolve the preceding propoſition, I begin the formation of the column of the dividend by the certain price of exchange between London and Liſbon, that is, by 1000 reis, and place on the right its equivalent repreſented by x, in the following manner,

$$1000 \text{ reis} = x.$$

Then I obſerve that the firſt term of the antecedents, or the firſt term of the diviſor, muſt always be of the ſame kind as the third term of the proportion, that is, as the firſt term in the dividend of the equation: thus, as Liſbon exchanges with Hamburgh by a cruſade of 400 reis, I reduce the reis into cruſades, by ſetting down 400 reis as the firſt term of the diviſor, placing oppoſite its equivalent, that is, 1 cruſade, in the following manner:

1000 reis = x
400 reis = 1 cruſade.

I proceed, and perceiving, by the quotation received from Liſbon, that 44 grotes Flemiſh banco are equivalent with 1 cruſade, I reduce the cruſades into grotes, by placing 1 cruſade as the ſecond term of the diviſor, and 44 grotes as the third term of the dividend, as follows:

1000 reis = x
400 reis = 1 cruſade
1 cruſade = 44 grotes.

Now, as Hamburgh exchanges with London by ſhillings Flemiſh banco, I reduce 44 grotes into ſhillings, by ſetting down 12 grotes as the third term of the diviſor, and placing oppoſite its equivalent, or 1 ſhilling, in the following manner:

1000 reis = x
400 reis = 1 cruſade
1 cruſade = 44 grotes
12 grotes = 1 ſhill. Flem.

I proceed, and as the quotation at London denotes that 34 ſhillings 6 grotes Flemiſh banco are equivalent with 1 pound ſterling, I reduce the ſhillings Flemiſh into pounds ſterling, by placing them reſpectively in the diviſor and dividend as follows:

1000 reis = x
400 reis = 1 cruſade
1 cruſade = 44 grotes
12 grotes = 1 ſhill. Flem.
34½ ſhill. Flem. = 1 pound ſterl.

And, laſtly, as London exchanges with Liſbon by pence ſterling, and as the laſt term of the dividend muſt be of the ſame denomination as the reſult of the operation, I reduce 1 pound ſterling into pence, by placing 240 pence in oppoſition to 1 pound, and I obtain the following equation:

EQUATION.

Diviſor.		Dividend.
		1000 reis = x
400 reis	=	1 cruſade
1 cruſade	=	44 grotes
12 grotes	=	1 ſhill. Flem.
34½ ſhill. Flem.	=	1 pound ſterl.
1 pound ſterl.	=	240 pence ſterl.

Whence the following general rule.

TO FIND THE EQUATION.

Always place the certain price of exchange as the firſt term of the dividend, the laſt term of which muſt be of the ſame nature as the uncertain price. Let each term of the diviſor be of the ſame denomination as that of the dividend immediately preceding, and place in the oppoſite column the quantities which are in equation with the terms of the diviſor.

Application to the preceding Propoſition.

1000 reis, which ſtand as the firſt term of the dividend, are the certain price of the exchange between London and Liſbon; and 240 pence, or the laſt term of the dividend, are of the ſame nature as the uncertain price.

400 reis, 1 cruſade, 12 grotes, 34½ ſhillings Flemiſh, and 1 pound ſterling, or the terms of the diviſor, are each of the ſame denomination as each of the terms of the dividend immediately preceding; and 1 cruſade, 44 grotes, 1 ſhilling Flemiſh, 1 pound ſterling, and 240 pence, or the remaining terms of the dividend, are reſpectively oppoſed as equivalent quantities.

TO RESOLVE THE EQUATION.

Multiply all the terms of each column into each other reſpectively; divide the product of the terms of the dividend by the product of the terms of the diviſor, and the quotient will be the anſwer required.

Calculations of arbitrations are, however, conſiderably abridged upon the undermentioned principle.

It is known, that all numbers of the ſame value, when oppoſed, neutralize each other. Hence it is, that we may efface from each column all terms which are alike, or divide them by one ſame number, and ſubſtitute their quotients, as ſuch reduction does not alter the reſult of the operation.

Application of this Principle to the preceding Equation.

$$\begin{array}{rcl} 10\cancel{0}\cancel{0} & = & x \\ \cancel{1}\ \cancel{4}\cancel{0}\cancel{0} & = & \cancel{1} \\ \cancel{1} & = & 44 \\ \cancel{1}\ \cancel{1}\cancel{2} & = & \cancel{1} \\ 34\frac{1}{2} & = & \cancel{1} \\ \cancel{1} & = & \cancel{2}\cancel{4}\cancel{0}\ \cancel{6}\cancel{0}\ 5 \end{array}$$

To abridge the calculation of this equation, I begin by ſtriking out two ciphers in each column, which anſwers to dividing 400 and 1000 by 100, and reduces thoſe numbers to 4 and 10; next I divide 4 and 240 by 4, which gives the quotients 1 and 60; then I divide 12 and 60 by 12, which gives the quotients 1 and 5; and, finally, by ſtriking out the units, which are numbers without powers, the diviſor is reduced to $34\frac{1}{2}$, and the dividend to 44 × 10 × 5, or to 44 × 50.

It will occur to the reader, that, in every arbitration between London and Liſbon, through Hamburgh, there are ſome terms not ſubject to any variation; ſuch are, 1000 reis, as the certain price of exchange between London and Liſbon; 400 reis, 12 grotes, and 240 pence, as the component parts of one cruſade, one ſhilling Flemiſh, and of one pound ſterling. Hence 50, product of 10 by 5, which is alſo the quotient of the ſame invariable numbers $\frac{1000 \times 240}{400 \times 12}$, may be defined *a fixed number,* and ſubſtituted to the four effective and invariable numbers, by which means the equation will be reduced to the following:

$$\begin{array}{ccccc} & & 50 & = & x \\ 34\frac{1}{2} & = & 44. & & \end{array}$$

It is evident, therefore, firſt, that to ſolve the propoſition in queſtion, it is only requiſite to multiply 50 by 44, dividing the product by $34\frac{1}{2}$. Secondly, that, in every arbitration between London and Liſbon through Hamburgh, it is only neceſſary to multiply the fixed number 50 by the actual courſe of exchange between Liſbon and Hamburgh, and to divide the product by the actual courſe of London on Hamburgh.

I preſume, that what I have ſaid will be ſufficient to demonſtrate the principle and utility of the rules which I have given for each operation; and, as I have inſerted the reſpective fixed numbers, the arbitrations may be calculated without the trouble of ſtating the operations in their original terms, ſince the two uncertain prices of exchange are in each operation the only terms ſubject to variation.

In every arbitration between two places by means of a third, there is neceſſarily a combination of two courſes of exchange, which are often themſelves fractional numbers. When one of thoſe courſes, or both, are in the dividend, the multiplication of its terms into each other muſt include the fractions by proportionate parts of their units; and if the product of the dividend ſhould be a whole number and a fraction, ſuch fraction ſhould merely be added to the product of the remainder multiplied by the parts of the units.

When one of the ſame courſes, or both, are in the diviſor, it is in like manner neceſſary that the multiplication of its terms into each other ſhould include the fractions by proportionate parts of their units; but when the diviſor itſelf is a whole number and a fraction, it is then, and in ſuch caſe only, neceſſary to remove the denominator of ſuch fraction, that is, to multiply the diviſor and the dividend by the denominator of the fraction, adding its numerator to the amount of the diviſor.

In order, therefore, to reſolve the equation,

$$\begin{matrix} & 50 = x \\ 34\tfrac{1}{2} = 44, & \end{matrix}$$

the following method muſt be obſerved:

$34\frac{1}{2}$	50
2 fraction	44
—	——
69 diviſor	2200
	2 fraction
	——
	$69)4400(63\frac{53}{69}$ reſult.
	260
	53

Thus the value of x being found, we have conſequently the following equation,

$$\begin{matrix} & 50 = 63\tfrac{53}{69} \\ 34\tfrac{1}{2} = 44; & \end{matrix}$$

which demonſtrates that the proportional exchange between London and Liſbon, reſulting from the ſolution of the propoſition, is $63\frac{53}{69}$ pence ſterling for 1000 reis.

In reſpect to the manner of placing in the equation the charges which are incurred for commiſſions, brokerages, and poſtages, upon an indirect draft or remittance, I refer my readers to the obſervations preceding the exemplification of arbitrations, and to the general rule I have given for charges; obſerving, however, that the charges are generally added to, or deducted from, the reſult.

PROOF OF THE RULE OF EQUATION.

To prove this rule, inſert, as the firſt term of the diviſor, the reſult of the operation, and multiply the terms of each column into each other reſpectively; their products muſt be equal.

The ſame rule is alſo proved by an inverſe operation; that is, by placing, as the firſt term of the dividend, the uncertain price reſulting from the arbitration, when the certain price will be the quotient.

EXAMPLE.

$63\frac{53}{69}$ pence ſterl. = 1000 reis reſult
240 pence ſterling = 1 pound ſterling
1 pound ſterling = $34\frac{1}{2}$ ſhillings Flemiſh
1 ſhill. Flemiſh = 12 grotes
44 grotes = 1 cruſade
1 cruſade = 400 reis.

I ſhall conclude by an example which will prove that all arbitrations of exchange are upon the ſame principle, ſince they have only for object to find the proportional exchange between two places reſulting from the combination of two or ſeveral quotations of exchange. And as the number of places, or quantities employed, do not alter their nature, the diſtinction between ſimple and compound arbitrations, which is made by writers upon exchanges, may be omitted.

EXAMPLE.

London, having funds at Hamburgh, draws the amount upon Liſbon, and, in order to provide for the draft, directs Hamburgh to remit to Paris, Paris to remit to Madrid, and Madrid to remit to Liſbon.

Hamburgh remits to Paris at the exchange of 25 ſhillings lubs banco for 3 francs; Paris remits to Madrid at 15 livres tournois for 1 piſtole of exchange; Madrid remits to Liſbon at 2300 reis for 1 piſtole of exchange; and London draws upon Liſbon at 63 pence ſterling per milreis. The charges incurred by theſe ſeveral remittances (excluſive of intereſt) are ſuppoſed to amount to 3 per cent, that is, $\frac{3}{4}$ per cent at each place for commiſſion, brokerage, and poſtages. The queſtion, therefore, is, what proportional exchange will thoſe prices eſtabliſh between London and Hamburgh, incluſive of the charges?

EQUATION.

1 pound ſterl. = 35 ſhill. $1\frac{1}{4}$ grotes
1 pound ſterl. = 240 pence ſterling
63 pence ſterl. = 1000 reis
2300 reis = 1 piſtole of exchange
1 piſt. of exch. = 15 livres tournois
81 livres tourn. = 80 francs
3 francs = 25 ſhillings banco
6 ſhill. banco = 1 ſhilling Flemiſh
100 with charges = 103.

Such arbitrations, however, through ſeveral places, as ſtated in books, are generally imaginary, and very ſeldom practicable in London, by the irregularity attending communications with the continent; the fluctuations to which exchanges are ſubject in the interval between the tranſmiſſion of the orders, and their execution; and, laſtly, the charges of commiſſion, brokerage, and poſtages, which would be incurred at every place.

LONDON AND AMSTERDAM.

Proportional Exchange.

	Quotation at London.	Quotation from Amſterdam.
On Amſterdam	37 3	
Genoa	45	83½
Hamburgh	35	34
Leghorn	48½	90
Liſbon	62	44½
Madrid	34½	88¼
Paris	25 15	53½

OBSERVATION.

London gives the certain price to Amſterdam; that is, one pound ſterling for ſo many ſhillings Flemiſh banco, more or leſs; therefore, when London remits to Amſterdam, that place through which the higheſt courſe of exchange can be obtained is to be preferred, becauſe more ſhillings Flemiſh will be received in exchange for one pound ſterling. On the contrary, when London has to draw upon Amſterdam, that place ſhould be choſen which furniſhes the loweſt courſe, becauſe leſs ſhillings Flemiſh will be given in exchange for a pound ſterling.

If you include the charges in the calculation, inſert, for an indirect remittance, 100 in the diviſor, and 100 leſs the charges in the dividend; and, for an indirect draft, place 100 in the diviſor, and 100 more the charges in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND AMSTERDAM
through Genoa.

A bill on Genoa taken in London at 45 pence ſterling per pezza of 5¾ lire fuori di banco is remitted to Amſterdam, and negotiated at 83½ grotes Flemiſh banco per pezza fuori di banco: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
45 pence = 1 pezza
1 pezza = 83½ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Amſterdam and Genoa; and divide the product by the courſe of London on Genoa.

20
83½
———
1660
10
———
45)1670(37 1⅓ reſult.
320
5
12
———
60
15

LONDON AND AMSTERDAM
through Hamburgh.

A bill on Hamburgh taken in London at 35 ſhillings Flemiſh banco per pound ſterling is remitted to Amſterdam, and negotiated at 34 ſtivers banco for 2 marcs lubs banco: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 35 ſhillings Flemiſh
8 ſhillings Flemiſh = 3 marcs
2 marcs banco = 34 ſtivers banco
6 ſtivers = 1 ſhilling Flemiſh.

RULE.

Multiply the courſe of exchange between London and Hamburgh by the courſe of Amſterdam on Hamburgh, and divide the product by 32, fixed number.

35
34
———
140
105
———
32)1190(37 $2\frac{1}{4}$ reſult.
230
6
12
———
72
8

LONDON AND AMSTERDAM
through Leghorn.

A bill on Leghorn taken in London at 48$\frac{1}{2}$ pence ſterling per pezza of 8 reals is remitted to Amſterdam, and negotiated at 90 grotes Flemiſh banco per pezza of 8 reals: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
48$\frac{1}{2}$ pence = 1 pezza
1 pezza = 90 grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Amſterdam and Leghorn; and divide the product by the courſe of London on Leghorn.

48$\frac{1}{2}$	20
2 fraction	90
97 div.	1800
	2 fraction

97)3600(37· 1$\frac{1}{3}$ reſult.
690
11
12
132
35

LONDON AND AMSTERDAM

through Liſbon.

A bill on Liſbon taken in London at 62 pence ſterling per milreis is remitted to Amſterdam, and negotiated at 44½ grotes Flemiſh banco per cruſade of 400 reis: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
62 pence = 1000 reis
400 reis = 44½ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 50, fixed number, by the courſe of exchange between Amſterdam and Liſbon; and divide the product by the courſe of London on Liſbon.

$$\begin{array}{l} 50 \\ 44\frac{1}{2} \\ \hline 2200 \\ 25 \\ \hline 62)2225(35\ \ 10\frac{2}{3}\ \text{reſult.} \\ 365 \\ 55 \\ 12 \\ \hline 110 \\ 55 \\ \hline 660 \\ 40 \end{array}$$

LONDON AND AMSTERDAM

through Madrid.

A bill on Madrid taken in London at $34\frac{1}{2}$ pence ſterling per dollar of exchange is remitted to Amſterdam, and negotiated at $88\frac{1}{4}$ grotes Flemiſh banco per ducat of exchange: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
$34\frac{1}{2}$ pence = 1 dollar
375 dollars = 272 ducats
1 ducat = $88\frac{1}{4}$ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 1088, fixed number, by the courſe of exchange between Amſterdam and Madrid; and divide the product by 75, fixed number, multiplied by the courſe of London on Madrid.

75	1088
$34\frac{1}{2}$	$88\frac{1}{4}$
300	8704
225	8704
$37\frac{1}{2}$	272
$2587\frac{1}{2}$	96016
2 fraction	2 fraction
5175 div.	5175)192032(37 $1\frac{5}{16}$ reſult.
	36782
	557
	12
	1114
	557
	6684
	1509

LONDON AND AMSTERDAM
through Paris.

A bill on Paris taken in London at 25 livres 15 ſols tournois per pound ſterling is remitted to Amſterdam, and negotiated at 53½ grotes Flemiſh banco for 3 francs: what is the proportional exchange between London and Amſterdam?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 25¾ livres tournois
81 livres tournois = 80 francs
3 francs = 53½ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 20, fixed number, by the courſe of exchange between London and Paris, and by the courſe of Amſterdam on Paris; divide the product by 729, fixed number.

20
25¾
515
53½
1545
2575
257½
729)27552½(37 9½ reſult.
5682
579
12
6954
393

RECAPITULATION OF THE PROPORTIONAL EXCHANGE

between London and Amſterdam.

Through Genoa it comes out at	37	$1\frac{1}{2}$
Hamburgh	37	$2\frac{1}{4}$
Leghorn	37	$1\frac{1}{8}$
Liſbon *will anſwer to draw*	35	$10\frac{2}{3}$
Madrid	37	$1\frac{5}{16}$
Paris *will anſwer to remit*	37	$9\frac{1}{2}$
Direct courſe between London and Amſterdam	37	3

APPLICATION TO REMIT.

It appears by the compariſon of the above-mentioned exchanges, that the proportional exchange upon Paris is the higheſt, and, conſequently, that it would be more advantageous to remit to Amſterdam by that place than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of 37 $9\frac{1}{2}$, inſtead of the direct, 37 3; ſo that a merchant would receive 37 ſhillings $9\frac{1}{2}$ grotes Flemiſh in exchange for one pound ſterling.

37 3 direct courſe : 37 $9\frac{1}{2}$ indirect courſe :: 100*l* :				101	9	1
Leſs for charges, at $\frac{3}{4}$ per cent	0	15	0	1	9	1
Advantage reſulting from the arbitration	0	14	1			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Amſterdam, inſtead of drawing directly, he would order his correſpondent at Amſterdam to take a bill on Liſbon at $44\frac{1}{2}$, and either to remit it thither to provide for drafts from London upon Liſbon at 62, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of 35 $10\frac{2}{3}$, inſtead of the direct, 37 3; ſo that a merchant would give only 35 ſhillings $10\frac{2}{3}$ grotes Flemiſh for one pound ſterling.

37 3 direct courſe : 35 $10\frac{2}{3}$ indirect courſe :: 100*l* :				96	6	10
Add for charges, at $\frac{3}{4}$ per cent	0	15	0	3	13	2
Advantage reſulting from the arbitration	2	18	2			
				100	0	0

LONDON AND GENOA.

Proportional Exchange.

	Quotation at London.	Quotation from Genoa.
On Genoa	46	
Amſterdam	37 4	84⅞
Hamburgh	35 4	46¼
Leghorn	50	124½
Liſbon	61½	765
Madrid	34¾	660
Paris	25 2	94⅞

OBSERVATION.

London gives the uncertain price to Genoa; that is, 46 pence ſterling, more or leſs, for one pezza fuori di banco; therefore, when London remits to Genoa, that place through which the loweſt courſe of exchange can be obtained is to be preferred, becauſe leſs pence will be given in exchange for one pezza. On the contrary, when London has to draw upon Genoa, that place ſhould be choſen which furniſhes the higheſt courſe, becauſe more pence will be received in exchange for a pezza.

If you include the charges in the operation, inſert, for an indirect remittance, 100 leſs the charges in the diviſor, and 100 in the dividend; and, for an indirect draft, place 100 more the charges in the diviſor, and 100 in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND GENOA

through Amſterdam.

A bill on Amſterdam taken in London at 37 ſhillings 4 grotes Flemiſh banco per pound ſterling is remitted to Genoa, and negotiated at $84\frac{7}{8}$ grotes Flemiſh banco per pezza of $5\frac{3}{4}$ lire fuori di banco: what is the proportional exchange between London and Genoa?

EQUATION.

1 pezza = x
1 pezza = $84\frac{7}{8}$ grotes
12 grotes = 1 ſhilling Flemiſh
$37\frac{1}{3}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Genoa and Amſterdam; and divide the product by the courſe of London on Amſterdam.

$37\frac{1}{3}$ 20
3 fraction $84\frac{7}{8}$

112 div. 1680
$17\frac{1}{2}$

$1697\frac{1}{2}$
3 fraction

$112)5092\frac{1}{2}(45\frac{1}{2}$ reſult.
612
52

LONDON AND GENOA

through Hamburgh.

A bill on Hamburgh taken in London at 35 ſhillings 4 grotes Flemiſh banco per pound ſterling is remitted to Genoa, and negotiated at $46\frac{1}{4}$ ſoldi fuori di banco per marc lubs banco : what is the proportional exchange between London and Genoa?

EQUATION.

1 pezza = x
1 pezza = 115 ſoldi
$46\frac{1}{4}$ ſoldi = 1 marc banco
3 marcs = 8 ſhillings Flemiſh
$35\frac{2}{6}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Divide 73600, fixed number, by the courſe of exchange between London and Hamburgh, multiplied by the courſe of Genoa on Hamburgh.

$35\frac{2}{6}$
6 fraction
212
$46\frac{1}{4}$
1272
848
53
9805 div.

73600
6 fraction
9805)441600(45 reſult.
49400
375

LONDON AND GENOA

through Leghorn.

A bill on Leghorn taken in London at 50 pence ſterling per pezza of 8 reals is remitted to Genoa, and negotiated at 124½ ſoldi fuori di banco per pezza of 8 reals: what is the proportional exchange between London and Genoa?

EQUATION.

1 pezza fuori di banco = x
1 pezza fuori di banco = 115 ſoldi ditto
124½ ſoldi ditto = 1 pezza of 8 reals
1 pezza of 8 reals = 50 pence ſterling.

RULE.

Multiply 115, fixed number, by the courſe of exchange between London and Leghorn; and divide the product by the courſe of Genoa on Leghorn.

124½ 115
2 fraction 50

249 div. 5750
2 fraction

249)11500(46$\frac{3}{16}$ reſult.
1540
46

LONDON AND GENOA

through Liſbon.

A bill on Liſbon taken in London at 61½ pence ſterling per milreis is remitted to Genoa, and negotiated at 765 reis per pezza of 115 ſoldi fuori di banco: what is the proportional exchange between London and Genoa?

EQUATION.

$$\begin{array}{rcl} & & 1\text{ pezza} = x \\ 1\text{ pezza} & = & 765\text{ reis} \\ 1000\text{ reis} & = & 61\tfrac{1}{2}\text{ pence.} \end{array}$$

RULE.

Multiply the courſe of exchange between Genoa and Liſbon by the courſe of London on Liſbon; and divide the product by 1000, fixed number.

$$\begin{array}{r} 765 \\ 61\tfrac{1}{2} \\ \hline 765 \\ 4590 \\ 382\tfrac{1}{2} \\ \hline 1{,}000)47{,}047\tfrac{1}{2}(47\tfrac{1}{21}\text{ reſult.} \end{array}$$

LONDON AND GENOA
through Madrid.

A bill on Madrid taken in London at 34$\frac{3}{4}$ pence ſterling per dollar of exchange is remitted to Genoa, and negotiated at 660 maravedis per gold crown: what is the proportional exchange between London and Genoa?

EQUATION.

1 pezza = x
1 pezza = 115 ſoldi
214 ſoldi = 1 gold crown
1 gold crown = 660 maravedis
272 maravedis = 1 dollar
1 dollar = 34$\frac{3}{4}$ pence.

RULE.

Multiply 115, fixed number, by the courſe of exchange between Genoa and Madrid, and by the courſe of London on Madrid; divide the product by 58208, fixed number.

115
660
6900
690
75900
34$\frac{3}{4}$
303600
227700
56925
58208)2637525(45$\frac{5}{16}$ reſult.
309205
18165

LONDON AND GENOA

through Paris.

A bill on Paris taken in London at 25 livres 2 ſols tournois per pound ſterling is remitted to Genoa, and negotiated at $94\frac{7}{8}$ ſols in francs per pezza of 115 ſoldi fuori di banco: what is the proportional exchange between London and Genoa?

EQUATION.

1 pezza = x
1 pezza = $94\frac{7}{8}$ ſols
20 ſols = 1 franc
80 francs = 81 livres tournois
$25\frac{1}{10}$ livres tournois = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 243, fixed number, by the courſe of exchange between Genoa and Paris; and divide the product by 20, fixed number, multiplied by the courſe of London on Paris.

20	243
$25\frac{1}{10}$	$94\frac{7}{8}$
502 div.	972
	2187
	$121\frac{4}{8}$
	$60\frac{6}{8}$
	$30\frac{3}{8}$

$502)23054\frac{5}{8}(45\frac{15}{16}$ reſult.
2974
464

RECAPITULATION OF THE PROPORTIONAL EXCHANGE *between London and Genoa.*

Through Amſterdam it comes out at	45 $\frac{1}{2}$
Hamburgh *will anſwer to remit*	45
Leghorn	46$\frac{3}{16}$
Liſbon *will anſwer to draw*	47$\frac{1}{21}$
Madrid	45$\frac{5}{16}$
Paris	45$\frac{15}{16}$
Direct courſe between London and Genoa	46

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Hamburgh is the loweſt, and, conſequently, that it would be more advantageous to remit to Genoa by that place, than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of 45, inſtead of the direct, 46; ſo that a merchant would give only 45 pence in exchange for one pezza fuori di banco.

46 direct courſe : 45 indirect courſe :: 100*l* :				97	16	6
Add for charges, at $\frac{3}{4}$ per cent	0	15	0	2	3	6
Advantage reſulting from the arbitration	1	8	6			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Genoa, inſtead of drawing directly, he would order his correſpondent at Genoa to take a bill on Liſbon at 765, and either to remit it thither to provide for drafts from London upon Liſbon at 61$\frac{1}{2}$, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of 47$\frac{1}{21}$, inſtead of the direct, 46; ſo that a merchant would receive 47$\frac{1}{21}$ pence in exchange for a pezza.

46 direct courſe : 47$\frac{1}{21}$ indirect courſe :: 100*l* :				102	5	7
Leſs for charges, at $\frac{3}{4}$ per cent	0	15	0	2	5	7
Advantage reſulting from the arbitration	1	10	7			
				100	0	0

LONDON AND HAMBURGH.

Proportional Exchange.

	Quotation at London.	Quotation from Hamburgh.
On Hamburgh	35	
Amſterdam	37 3	34¼
Genoa	45	78
Leghorn	48¼	85¾
Liſbon	61¾	41¾
Madrid	34½	82½
Paris	25 10	24⅞

OBSERVATION.

London gives the certain price to Hamburgh, that is, one pound ſterling for ſo many ſhillings Flemiſh banco, more or leſs; therefore, when London remits to Hamburgh, that place through which the higheſt courſe of exchange can be obtained is to be preferred, becauſe more ſhillings Flemiſh will be received in exchange for one pound ſterling. On the contrary, when London has to draw upon Hamburgh, that place ſhould be choſen which furniſhes the loweſt courſe, becauſe leſs ſhillings Flemiſh will be given in exchange for a pound ſterling.

If you include the charges in the operation, inſert, for an indirect remittance, 100 in the diviſor, and 100 leſs the charges in the dividend; and, for an indirect draft, place 100 in the diviſor, and 100 more the charges in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND HAMBURGH

through Amſterdam.

A bill on Amſterdam taken in London at 37 ſhillings 3 grotes Flemiſh banco per pound ſterling is remitted to Hamburgh, and negotiated at 34¼ ſtivers banco for 2 marcs lubs banco: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 37¼ ſhillings Flemiſh
1 ſhill. Flemiſh = 6 ſtivers
34¼ ſtivers banco = 2 marcs banco
3 marcs = 8 ſhillings Flemiſh.

RULE.

Multiply 32, fixed number, by the courſe of exchange between London and Amſterdam; and divide the product by the courſe of Hamburgh on Amſterdam.

34¼
4 fraction
137 div.

32
37¼
224
96
8
1192
4 fraction
137)4768(34 9⅔ reſult.
658
110
12
220
110
1320
87

LONDON AND HAMBURGH

through Genoa.

A bill on Genoa taken in London at 45 pence ſterling per pezza of 115 ſoldi fuori di banco is remitted to Hamburgh, and negotiated at 78 grotes Flemiſh banco per pezza fuori di banco: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
45 pence = 1 pezza
1 pezza = 78 grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Hamburgh and Genoa; and divide the product by the courſe of London on Genoa.

20
78
———
45)1560(34 8 reſult.
210
30
12
———
360
0

LONDON AND HAMBURGH
through Leghorn.

A bill on Leghorn taken in London at 48$\frac{1}{4}$ pence ſterling per pezza of 8 reals is remitted to Hamburgh, and negotiated at 85$\frac{3}{4}$ grotes Flemiſh banco per pezza of 8 reals: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
48$\frac{1}{4}$ pence = 1 pezza
1 pezza = 85$\frac{3}{4}$ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Hamburgh and Leghorn; and divide the product by the courſe of London on Leghorn.

48$\frac{1}{4}$
4 fraction
———
193 div.

20
85$\frac{3}{4}$
———
1700
15
———
1715
4 fraction
———
193)6860(35 6$\frac{1}{2}$ reſult.
1070
105
12
———
210
105
———
1260
102

LONDON AND HAMBURGH

through Liſbon.

A bill on Liſbon taken in London at $61\frac{3}{4}$ pence ſterling per milreis is remitted to Hamburgh, and negotiated at $41\frac{3}{4}$ grotes Flemiſh banco per cruſade of 400 reis: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
$61\frac{3}{4}$ pence = 1000 reis
400 reis = $41\frac{3}{4}$ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 50, fixed number, by the courſe of exchange between Hamburgh and Liſbon; and divide the product by the courſe of London on Liſbon.

$61\frac{3}{4}$
4 fraction
247 div.

50
$41\frac{3}{4}$
2050
$37\frac{1}{2}$
$2087\frac{1}{2}$
4 fraction
247)8350(33 $9\frac{2}{3}$ reſult.
940
199
12
398
199
2388
165

LONDON AND HAMBURGH
through Madrid.

A bill on Madrid taken in London at 34½ pence ſterling per dollar of exchange is remitted to Hamburgh, and negotiated at 82½ grotes Flemiſh banco per ducat of exchange: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
34½ pence = 1 dollar
375 dollars = 272 ducats
1 ducat = 82½ grotes
12 grotes = 1 ſhilling Flemiſh.

RULE.

Multiply 1088, fixed number, by the courſe of exchange between Hamburgh and Madrid; and divide the product by 75, fixed number, multiplied by the courſe of London on Madrid.

75	1088
34½	82½
300	2176
225	8704
37½	544
2587½	89760
2 fraction	2 fraction
5175 div.	5175)179520(34 8¼ reſult.
	24270
	3570
	12
	7140
	3570
	42840
	1440

LONDON AND HAMBURGH
through Paris.

A bill on Paris taken in London at 25 livres 10 ſols tournois per pound ſterling is remitted to Hamburgh, and negotiated at $24\frac{7}{8}$ ſhillings lubs banco for 3 francs: what is the proportional exchange between London and Hamburgh?

EQUATION.

1 pound ſterling = x
1 pound ſterling = $25\frac{1}{2}$ livres tournois
81 livres tournois = 80 francs
3 francs = $24\frac{7}{8}$ ſhillings banco
6 ſhillings banco = 1 ſhilling Flemiſh.

RULE.

Multiply 40, fixed number, by the courſe of exchange between London and Paris, and by the courſe of Hamburgh on Paris; divide the product by 729, fixed number.

40
$25\frac{1}{2}$

1020
$24\frac{7}{8}$

4080
2040
$892\frac{1}{2}$

$729)25372\frac{1}{2}(34\ 9\frac{2}{3}$ reſult.
3502
586
12

1178
585

7038
477

RECAPITULATION OF THE PROPORTIONAL EXCHANGE *between London and Hamburgh.*

Through Amſterdam it comes out at	34	9⅔
Genoa	34	8
Leghorn *will anſwer to remit*	35	6½
Liſbon *will anſwer to draw*	33	9⅔
Madrid	34	8¼
Paris	34	9⅔
Direct courſe between London and Hamburgh	35	

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Leghorn is the higheſt, and, conſequently, that it would be more advantageous to remit to Hamburgh by that place, than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of 35 6½, inſtead of the direct, 35; ſo that a merchant would receive 33 ſhillings 6½ grotes Flemiſh for one pound ſterling.

35 direct courſe : 35 6½ indirect courſe :: 100*l* :				101	10	11
Leſs for charges, at ¾ per cent	0	15	0	1	10	11
Advantage reſulting from the arbitration	0	15	11			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Hamburgh, inſtead of drawing directly, he would order his correſpondent at Hamburgh to take a bill on Liſbon at 41¾, and either to remit it thither to provide for drafts from London upon Liſbon at 61¾, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of 33 9⅔, inſtead of the direct, 35; ſo that a merchant would give only 33 ſhillings 9⅔ grotes Flemiſh in exchange for one pound ſterling.

35 direct courſe : 33 9⅔ indirect courſe :: 100*l* :				96	11	8
Add for charges, at ¾ per cent	0	15	0	3	8	4
Advantage reſulting from the arbitration	2	13	4			
				100	0	0

LONDON AND LEGHORN.

Proportional Exchange.

	Quotation at London.	Quotation from Leghorn.
On Leghorn	50	
Amſterdam	37 2	92
Genoa	45¾	124
Hamburgh	35 1	86¼
Liſbon	61½	830
Madrid	35	142
Paris	24 15	104

OBSERVATION.

London gives the uncertain price to Leghorn; that is, 50 pence ſterling, more or leſs, for one pezza of 8 reals; therefore, when London remits to Leghorn, that place through which the loweſt courſe of exchange can be obtained is to be preferred, becauſe leſs pence will be given in exchange for one pezza. On the contrary, when London has to draw upon Leghorn, that place ſhould be choſen which furniſhes the higheſt courſe, becauſe more pence will be received in exchange for a pezza.

If you include the charges in the operation, inſert, for an indirect remittance, 100 leſs the charges in the diviſor, and 100 in the dividend; and, for an indirect draft, place 100 more the charges in the diviſor, and 100 in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND LEGHORN

through Amſterdam.

A bill on Amſterdam taken in London at 37 ſhillings 2 grotes Flemiſh banco per pound ſterling is remitted to Leghorn, and negotiated at 92 grotes Flemiſh banco per pezza of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza = x
1 pezza = 92 grotes
12 grotes = 1 ſhilling Flemiſh
$37\frac{1}{6}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Leghorn and Amſterdam; and divide the product by the courſe of London on Amſterdam.

$37\frac{1}{6}$ 20
6 fraction   92

223 div.   1840
6 fraction

223)11040($49\frac{1}{2}$ reſult.
2120
113

LONDON AND LEGHORN

through Genoa.

A bill on Genoa taken in London at 45¾ pence ſterling per pezza of 115 ſoldi fuori di banco is remitted to Liſbon, and negotiated at 124 ſoldi fuori di banco per pezza of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza of 8 reals = x
1 pezza of 8 reals = 124 ſoldi fuori di banco
115 ſoldi fuori di banco = 1 pezza ditto
1 pezza ditto = 45¾ pence ſterling.

RULE.

Multiply the courſe of exchange between Leghorn and Genoa by the courſe of London on Genoa; and divide the product by 115, fixed number.

124
45¾
———
620
496
62
31
———
115)5673(49⅓ reſult.
1073
38

LONDON AND LEGHORN

through Hamburgh.

A bill on Hamburgh taken in London at 35 ſhillings 1 grote Flemiſh banco per pound ſterling is remitted to Leghorn, and negotiated at $86\frac{1}{4}$ grotes Flemiſh banco per pezza of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza = x
1 pezza = $86\frac{1}{4}$ grotes
12 grotes = 1 ſhilling Flemiſh
$35\frac{1}{12}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 20, fixed number, by the courſe of exchange between Leghorn and Hamburgh; and divide the product by the courſe of London on Hamburgh.

$35\frac{1}{12}$	20
12 fraction	$86\frac{1}{4}$
71	1720
35	5
421 diviſor	1725
	12 fraction
	3450
	1725

421)20700($49\frac{1}{6}$ reſult.
3860
71

LONDON AND LEGHORN
through Liſbon.

A bill on Liſbon taken in London at 61½ pence ſterling per milreis is remitted to Leghorn, and negotiated at 830 reis per pezza of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza = x
1 pezza = 830 reis
1000 reis = 61½ pence.

RULE.

Multiply the courſe of exchange between Leghorn and Liſbon by the courſe of London on Liſbon; and divide the product by 1000, fixed number.

830
61½
———
830
4980
415
———
1,000)51,045(51$\frac{1}{22}$ reſult.

LONDON AND LEGHORN

through Madrid.

A bill on Madrid taken in London at 35 pence ſterling per dollar of exchange is remitted to Leghorn, and negotiated at 142 dollars of exchange for 100 pezze of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza = x

100 pezze = 142 dollars

1 dollar = 35 pence.

RULE.

Multiply the courſe of exchange between Leghorn and Madrid by the courſe of London on Madrid; and divide the product by 100, fixed number.

```
 142
  35
 ———
 710
426
 ———
```

1,00)49,70(49$\frac{7}{10}$ reſult.

LONDON AND LEGHORN

through Paris.

A bill on Paris taken in London at 24 livres 15 ſols tournois per pound ſterling is remitted to Leghorn, and negotiated at 104 ſols in francs per pezza of 8 reals: what is the proportional exchange between London and Leghorn?

EQUATION.

1 pezza = x
1 pezza = 104 ſols
20 ſols = 1 franc
80 francs = 81 livres tournois
$24\frac{3}{4}$ livres tournois = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 243, fixed number, by the courſe of exchange between Leghorn and Paris; and divide the product by 20, fixed number, multiplied by the courſe of London on Paris.

20	243
$24\frac{3}{4}$	104
480	972
15	2430
495 div.	495)25272($51\frac{1}{18}$ reſult.
	522
	27

RECAPITULATION OF THE PROPORTIONAL EXCHANGE

between London and Leghorn.

Through Amſterdam it comes out at	$49\frac{1}{2}$
Genoa	$49\frac{1}{3}$
Hamburgh *will anſwer to remit*	$49\frac{1}{6}$
Liſbon	$51\frac{1}{22}$
Madrid	$49\frac{7}{10}$
Paris *will anſwer to draw*	$51\frac{1}{18}$
Direct courſe between London and Leghorn	50

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Hamburgh is the loweſt, and, conſequently, that it would be more advantageous to remit to Leghorn by that place than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of $49\frac{1}{6}$, inſtead of the direct, 50; ſo that a merchant would give only $49\frac{1}{6}$ pence ſterling in exchange for one pezza of 8 reals.

50 direct courſe : $49\frac{1}{6}$ indirect courſe :: 100*l* : . .				98	6	8
Add for charges, at ¾ per cent	0	15	0	1	13	4
Advantage reſulting from the arbitration	0	18	4			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Leghorn, inſtead of drawing directly, he would order his correſpondent at Leghorn to take a bill on Paris at 104, and either to remit it thither to provide for drafts from London upon Paris at 24 15, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of $51\frac{1}{18}$, inſtead of the direct, 50, ſo that a merchant would receive $51\frac{1}{18}$ pence in exchange for a pezza.

50 direct courſe : $51\frac{1}{18}$ indirect courſe :: 100*l* : . .				102	2	2
Leſs for charges, at ¾ per cent	0	15	0	2	2	2
Advantage reſulting from the arbitration	1	7	2			
				100	0	0

LONDON AND LISBON.

Proportional Exchange.

	Quotation at London.	Quotation from Liſbon.
On Liſbon	61	
Amſterdam	36 10	46½
Genoa	45½	730
Hamburgh	34 10	44
Leghorn	49	830
Madrid	34½	2250
Paris	24 18	460

OBSERVATION.

London gives the uncertain price to Liſbon, that is, 61 pence ſterling, more or leſs, for 1000 reis; therefore, when London remits to Liſbon, that place through which the loweſt courſe of exchange can be obtained is to be preferred, becauſe leſs pence will be given in exchange for milreis. On the contrary, when London has to draw upon Liſbon, that place ſhould be choſen which furniſhes the higheſt courſe, becauſe more pence will be received in exchange for milreis.

If you include the charges in the equation, inſert, for an indirect remittance, 100 leſs the charges in the diviſor, and 100 in the dividend; and, for an indirect draft, place 100 more the charges in the diviſor, and 100 in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND LISBON

through Amſterdam.

A bill on Amſterdam taken in London at 36 ſhillings 10 grotes Flemiſh banco per pound ſterling is remitted to Liſbon, and negotiated at $46\frac{1}{2}$ grotes Flemiſh banco per cruſade of 400 reis: what is the proportional exchange between London and Liſbon?

EQUATION.

1000 reis = x
400 reis = $46\frac{1}{2}$ grotes
12 grotes = 1 ſhilling Flemiſh
$36\frac{5}{6}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 50, fixed number, by the courſe of exchange between Liſbon and Amſterdam; and divide the product by the courſe of London on Amſterdam.

$$\begin{array}{lll} 36\frac{5}{6} & & 50 \\ 6 \text{ fraction} & & 46\frac{1}{2} \\ \hline 221 \text{ diviſor} & & 2300 \\ & & 25 \\ \hline & & 2325 \\ & & 6 \text{ fraction} \\ \hline \end{array}$$

221)13950($63\frac{1}{8}$ reſult.
690
27

LONDON AND LISBON
through Genoa.

A bill on Genoa taken in London at 45½ pence ſterling per pezza of 115 ſoldi fuori di banco is remitted to Liſbon, and negotiated at 730 reis per pezza fuori di banco: what is the proportional exchange between London and Liſbon?

EQUATION.

1000 reis = x
730 reis = 1 pezza
1 pezza = 45½ pence.

RULE.

Multiply 1000, fixed number, by the courſe of exchange between London and Genoa; and divide the product by the courſe of Liſbon on Genoa.

```
     1000
      45½
    -----
    45000
      500
    -----
730)45500(62⅓ reſult.
     1700
      240
```

LONDON AND LISBON
through Hamburgh.

A bill on Hamburgh taken in London at 34 ſhillings 10 grotes Flemiſh banco per pound ſterling is remitted to Liſbon, and negotiated at 44 grotes Flemiſh banco per cruſade of 400 reis: what is the proportional exchange between London and Liſbon?

EQUATION.

1000 reis = x
400 reis = 44 grotes
12 grotes = 1 ſhilling Flemiſh
$34\frac{5}{6}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 50, fixed number, by the courſe of exchange between Liſbon and Hamburgh; and divide the product by the courſe of London on Hamburgh.

$34\frac{5}{6}$	50
6 fraction	44
209 diviſor	2200
	6 fraction

209)13200($63\frac{5}{32}$ reſult.
660
33

LONDON AND LISBON

through Leghorn.

A bill on Leghorn taken in London at 49 pence ſterling per pezza of 8 reals is remitted to Liſbon, and negotiated at 830 reis per pezza of 8 reals: what is the proportional exchange between London and Liſbon?

EQUATION.

$$\begin{array}{rcl} & & 1000 \text{ reis} = x \\ 830 \text{ reis} & = & 1 \text{ pezza} \\ 1 \text{ pezza} & = & 49 \text{ pence.} \end{array}$$

RULE.

Multiply 1000, fixed number, by the courſe of exchange between London and Leghorn; and divide the product by the courſe of Liſbon on Leghorn.

$$\begin{array}{r} 1000 \\ 49 \\ \hline \end{array}$$

$830)49000(59\frac{1}{27}$ reſult.

$$\begin{array}{r} 7500 \\ 30 \end{array}$$

LONDON AND LISBON

through Madrid.

A bill on Madrid taken in London at 34½ pence ſterling per dollar of exchange is remitted to Liſbon, and negotiated at 2250 reis per piſtole of exchange: what is the proportional exchange between London and Liſbon?

EQUATION.

1000 reis = x
2250 reis = 1 piſtole
1 piſtole = 4 dollars
1 dollar = 34½ pence.

RULE.

Multiply 4000, fixed number, by the courſe of exchange between London and Madrid; and divide the product by the courſe of Liſbon on Madrid.

```
        4000
         34½
     -------
      136000
        2000
     -------
2250)138000(61⅓ reſult.
        3000
         750
```

LONDON AND LISBON

through Paris.

A bill on Paris taken in London at 24 livres 18 ſols tournois per pound ſterling is remitted to Liſbon, and negotiated at 460 reis for 3 francs: what is the proportional exchange between London and Liſbon?

EQUATION.

1000 reis = x

460 reis = 3 francs

80 francs = 81 livres tournois

$24\frac{9}{10}$ livres tournois = 1 pound ſterling

1 pound ſterling = 240 pence ſterling.

RULE.

Divide 729000, fixed number, by the courſe of exchange between Liſbon and Paris, multiplied by the courſe of London on Paris.

460	11454)729000($63\frac{2}{3}$ reſult.
$24\frac{9}{10}$	41760
———	7398
1840	
920	
230	
92	
92	
———	
11454 div.	

RECAPITULATION OF THE PROPORTIONAL EXCHANGE *between London and Liſbon.*

Through Amſterdam it comes out at	$63\frac{1}{8}$
Genoa	$62\frac{1}{3}$
Hamburgh	$63\frac{5}{32}$
Leghorn *will anſwer to remit*	$59\frac{1}{27}$
Madrid	$61\frac{1}{3}$
Paris *will anſwer to draw*	$63\frac{2}{3}$
Direct courſe between London and Liſbon	61

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Leghorn is the loweſt, and, conſequently, that it would be more advantageous to remit to Liſbon by that place than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of $59\frac{1}{27}$, inſtead of the direct, 61; ſo that a merchant would give only $59\frac{1}{27}$ pence ſterling in exchange for milreis.

61 direct courſe : $59\frac{1}{27}$ indirect courſe :: 100*l* : . . .				96	15	7
Add for charges, at $\frac{3}{4}$ per cent	0	15	0	3	4	5
Advantage reſulting from the arbitration	2	9	5			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Liſbon, inſtead of drawing directly, he would order his correſpondent at Liſbon to take a bill on Paris at 460, and either to remit it thither to provide for drafts from London upon Paris at 24 18, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of $63\frac{2}{3}$, inſtead of the direct, 61; ſo that a merchant would receive $63\frac{2}{3}$ pence in exchange for milreis.

61 direct courſe : $63\frac{2}{3}$ indirect courſe :: 100*l* : . . .				104	7	5
Leſs for charges, at $\frac{3}{4}$ per cent	0	15	0	4	7	5
Advantage reſulting from the arbitration	3	12	5			
				100	0	0

LONDON AND MADRID.

Proportional Exchange.

	Quotation at London.	Quotation from Madrid.
On Madrid	35½	
Amſterdam	37 6	88½
Genoa	45½	126½
Hamburgh	35 2	83
Leghorn	50	136
Liſbon	62	2300
Paris	25 5	15 6

OBSERVATION.

London gives the uncertain price to Madrid, that is, 35½ pence ſterling, more or leſs, for one dollar of exchange; therefore, when London remits to Madrid, that place through which the loweſt courſe of exchange can be obtained is to be preferred, becauſe leſs pence will be given in exchange for one dollar of exchange. On the contrary, when London has to draw upon Madrid, that place ſhould be choſen which furniſhes the higheſt courſe, becauſe more pence will be received in exchange for a dollar.

If you include the charges in the equation, inſert, for an indirect remittance, 100 leſs the charges in the diviſor, and 100 in the dividend; and, for an indirect draft, place 100 more the charges in the diviſor, and 100 in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND MADRID
through Amſterdam.

A bill on Amſterdam taken in London at 37 ſhillings 6 grotes Flemiſh banco per pound ſterling is remitted to Madrid, and negotiated at 88½ grotes Flemiſh banco per ducat of exchange: what is the proportional exchange between London and Madrid?

EQUATION.

1 dollar = x
375 dollars = 272 ducats
1 ducat = 88½ grotes
12 grotes = 1 ſhilling Flemiſh
37½ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 1088, fixed number, by the courſe of exchange between Madrid and Amſterdam; and divide the product by 75, fixed number, multiplied by the courſe of London on Amſterdam.

75	1088
37½	88½
525	8704
225	8704
37½	544
2812½	96288
2 fraction	2 fraction
5625 diviſor	5625)192576(34¼ reſult.
	23826
	1326

LONDON AND MADRID

through Genoa.

A bill on Genoa taken in London at $45\frac{1}{2}$ pence ſterling per pezza of 115 ſoldi fuori di banco is remitted to Paris, and negotiated at $126\frac{1}{2}$ dollars of exchange for 100 pezze fuori di banco: what is the proportional exchange between London and Madrid?

EQUATION.

$$\begin{aligned} 1 \text{ dollar} &= x \\ 126\tfrac{1}{2} \text{ dollars} &= 100 \text{ pezze} \\ 1 \text{ pezza} &= 45\tfrac{1}{2} \text{ pence.} \end{aligned}$$

RULE.

Multiply 100, fixed number, by the courſe of exchange between London and Genoa; and divide the product by the courſe of Madrid on Genoa.

$126\frac{1}{2}$	100
2 fraction	$45\frac{1}{2}$
253 div.	4500
	50
	4550
	2 fraction

253)9100($35\frac{23}{24}$ reſult.

1510

245

LONDON AND MADRID

through Hamburgh.

A bill on Hamburgh taken in London at 35 ſhillings 2 grotes Flemiſh banco per pound ſterling is remitted to Madrid, and negotiated at 83 grotes Flemiſh banco per ducat of exchange: what is the proportional exchange between London and Madrid?

EQUATION.

1 dollar = x
375 dollars = 272 ducats
1 ducat = 83 grotes
12 grotes = 1 ſhilling Flemiſh
$35\frac{1}{6}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 1088, fixed number, by the courſe of exchange between Madrid and Hamburgh; and divide the product by 75, fixed number, multiplied by the courſe of London on Hamburgh.

75	1088
$35\frac{1}{6}$	83
375	3264
225	8704
$12\frac{1}{2}$	
	90304
$2637\frac{1}{2}$	2 fraction
2 fraction	
	5275)180608($34\frac{1}{4}$ reſult.
5275 diviſor	22358
	1258

LONDON AND MADRID

through Leghorn.

A bill on Leghorn taken in London at 50 pence ſterling per pezza of 8 reals is remitted to Madrid, and negotiated at 136 dollars of exchange for 100 pezze of 8 reals: what is the proportional exchange between London and Madrid?

EQUATION.

1 dollar = x
136 dollars = 100 pezze
1 pezza = 50 pence.

RULE.

Multiply 100, fixed number, by the courſe of exchange between London and Leghorn; and divide the product by the courſe of Madrid on Leghorn.

```
          100
           50
          ———
136)5000(36¾ reſult.
     920
     104
```

LONDON AND MADRID

through Liſbon.

A bill on Liſbon taken in London at 62 pence ſterling per milreis is remitted to Madrid, and negotiated at 2300 reis per piſtole of exchange: what is the proportional exchange between London and Madrid?

1 dollar = x
4 dollars = 1 piſtole
1 piſtole = 2300 reis
1000 reis = 62 pence.

RULE.

Multiply the courſe of exchange between Madrid and Liſbon by the courſe of London on Liſbon; and divide the product by 4000, fixed number.

2300
62

4600
13800

4000)142600($35\frac{2}{3}$ reſult.
22600
2600

LONDON AND MADRID
through Paris.

A bill on Paris taken in London at 25 livres 5 ſols tournois per pound ſterling is remitted to Madrid, and negotiated at 15 livres 6 ſols tournois per piſtole of exchange: what is the proportional exchange between London and Madrid?

EQUATION.

1 dollar = x
4 dollars = 1 piſtole
1 piſtole = $15\frac{3}{10}$ livres tournois
$25\frac{1}{4}$ livres tournois = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

RULE.

Multiply 60, fixed number, by the courſe of exchange between Madrid and Paris; and divide the product by the courſe of London on Paris.

$25\frac{1}{4}$	60
4 fraction	$15\frac{3}{10}$
101 diviſor	900
	18
	918
	4 fraction

101)3672($36\frac{1}{3}$ reſult.
642
36

RECAPITULATION OF THE PROPORTIONAL EXCHANGE *between London and Madrid.*

Through Amſterdam it comes out, and *will anſwer to remit*	34 ¼
Genoa	$35\frac{23}{24}$
Hamburgh	34 ¼
Leghorn *will anſwer to draw*	36 ¾
Liſbon	35 ⅔
Paris	36 ⅓
Direct courſe between London and Madrid	35 ½

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Amſterdam is the loweſt, and, conſequently, that it would be more advantageous to remit to Madrid by that place than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of 34¼, inſtead of the direct, 35½; ſo that a merchant would give only 34¼ pence ſterling in exchange for one dollar of exchange.

35½ direct courſe : 34¼ indirect courſe :: 100*l* :				96	9	7
Add for charges, at ¾ per cent	0	15	0	3	10	5
Advantage reſulting from the arbitration	2	15	5			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Madrid, inſtead of drawing directly, he would order his correſpondent at Madrid to take a bill on Leghorn at 136, and either to remit it thither to provide for drafts from London upon Leghorn at 50, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of 36¾, inſtead of the direct, 35½; ſo that a merchant would receive 36¾ pence for a dollar.

35½ direct courſe : 36¾ indirect courſe :: 100*l* : . . .				103	10	5
Leſs for charges, at ¾ per cent . . : . . .	0	15	0	3	10	5
Advantage reſulting from the arbitration	2	15	5			
				100	0	0

LONDON AND PARIS.

Proportional Exchange.

	Quotation at London.	Quotation from Paris.
On Paris	25 8	
Amſterdam	37 5	$54\frac{1}{8}$
Genoa	45	$93\frac{1}{4}$
Hamburgh	35 6	197
Leghorn	$48\frac{1}{2}$	101
Liſbon	61	480
Madrid	$35\frac{1}{2}$	14 12 6

OBSERVATION.

London gives the certain price to Paris, that is, one pound ſterling for ſo many livres tournois, more or leſs; therefore, when London remits to Paris, that place through which the higheſt courſe of exchange can be obtained is to be preferred, becauſe more livres tournois will be received in exchange for one pound ſterling. On the contrary, when London has to draw upon Paris, that place ſhould be choſen which furniſhes the loweſt courſe, becauſe leſs livres tournois will be given in exchange for a pound ſterling.

If you include the charges in the equation, inſert, for an indirect remittance, 100 in the diviſor, and 100 leſs the charges in the dividend; and, for an indirect draft, place 100 in the diviſor, and 100 more the charges in the dividend.

N. B. The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the advantage which may be derived from the compariſon of the different proportional exchanges.

LONDON AND PARIS

through Amſterdam.

A bill on Amſterdam taken in London at 37 ſhillings 5 grotes Flemiſh banco per pound ſterling is remitted to Paris, and negotiated at $54\frac{1}{8}$ grotes for 3 francs: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = $37\frac{5}{12}$ ſhillings Flemiſh
1 ſhill. Flemiſh = 12 grotes
$54\frac{1}{8}$ grotes = 3 francs
80 francs = 81 livres tournois.

RULE.

Multiply 729, fixed number, by the courſe of exchange between London and Amſterdam; and divide the product by 20, fixed number, multiplied by the courſe of Paris on Amſterdam.

20
$54\frac{1}{8}$
———
1080
$2\frac{1}{2}$
———
$1082\frac{1}{2}$
2 fraction
———
2165 diviſor

729
37 5
———
5103
2187
$303\frac{3}{4}$
———
$27276\frac{3}{4}$
2 fraction
———
$2165)54553\frac{1}{2}($25 3 11 reſult.
11253
428
20
———
8570
2075
12
———
24900
3250
1085
X 4

LONDON AND PARIS

through Genoa.

A bill on Genoa taken in London at 45 pence ſterling per pezza of 5¾ lire fuori di banco is remitted to Paris, and negotiated at 93¼ ſols in francs per pezza fuori di banco: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
45 pence = 1 pezza
1 pezza = 93¼ ſols
20 ſols = 1 franc
80 francs = 81 livres tournois.

RULE.

Multiply 243, fixed number, by the courſe of exchange between Paris and Genoa; and divide the product by 20, fixed number, multiplied by the courſe of London on Genoa.

20
45
―――
900 diviſor

243
93¼
―――
729
2187
60¾
―――
900)22659¾(25 3 6 reſult.
4659
159
20
―――
3195
495
12
―――
5940
540

LONDON AND PARIS
through Hamburgh.

A bill on Hamburgh taken in London at 35 ſhillings 6 grotes Flemiſh banco per pound ſterling is remitted to Paris, and negotiated at 197 livres tournois for 100 marcs lubs banco: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 35½ ſhillings Flemiſh
8 ſhillings Flemiſh = 3 marcs
100 marcs banco = 197 livres tournois.

RULE.

Multiply 3, fixed number, by the courſe of exchange between London and Hamburgh, and by the courſe of Paris on Hamburgh; divide the product by 800, fixed number.

```
            3
           35½
          ————
          106½
          197
          ————
          742
         954
        106
           98½
         —————
800)20980½(26 4 6 reſult.
      4980
       180
        20
      ————
      3610
       410
        12
      ————
      4920
       120
```

LONDON AND PARIS

through Leghorn.

A bill on Leghorn taken in London at 48½ pence ſterling per pezza of 8 reals is remitted to Paris, and negotiated at 101 ſols in francs per pezza of 8 reals: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
48½ pence = 1 pezza
1 pezza = 101 ſols
20 ſols = 1 franc
80 francs = 81 livres tournois.

RULE.

Multiply 243, fixed number, by the courſe of exchange between Paris and Leghorn; and divide the product by 20, fixed number, multiplied by the courſe of London on Leghorn.

20	243
48½	101
960	243
10	2430
970 div.	970)24543(25 6 reſult.
	5143
	293
	20
	5860
	40
	12
	480

LONDON AND PARIS

through Liſbon.

A bill on Liſbon taken in London at 61 pence ſterling per milreis is remitted to Paris, and negotiated at 480 reis for 3 francs: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
61 pence = 1000 reis
480 reis = 3 francs
80 francs = 81 livres tournois.

RULE.

Divide 729000, fixed number, by the courſe of exchange between Paris and Liſbon multiplied by the courſe of London on Liſbon.

```
 480         29280)729000(24  17  11 reſult.
  61                143400
 ----                26280
 480                    20
2880                ------
----                525600
29280 div.          232800
                     27840
                        12
                    ------
                     55680
                    27840
                    ------
                    334080
                     41280
                     12000
```

LONDON AND PARIS
through Madrid.

A bill on Madrid taken in London at 35½ pence ſterling per dollar of exchange is remitted to Paris, and negotiated at 14 livres 12 ſols 6 deniers tournois per piſtole of exchange: what is the proportional exchange between London and Paris?

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence
35½ pence = 1 dollar
4 dollars = 1 piſtole
1 piſtole = 14⅝ livres tournois.

RULE.

Multiply 60, fixed number, by the courſe of exchange between Paris and Madrid; and divide the product by the courſe of London on Madrid.

35½
2 fraction
71 diviſor

60
14⅝
840
37½
877½
2 fraction
71)1755(24 14 4 reſult.
335
51
20
1020
310
26
12
312
28

RECAPITULATION OF THE PROPORTIONAL EXCHANGE *between London and Paris.*

Through Amſterdam it comes out at	25	3	11
Genoa	25	3	6
Hamburgh *will anſwer to remit*	26	4	6
Leghorn	25	6	0
Liſbon	24	17	11
Madrid *will anſwer to draw*	24	14	4
Direct courſe between London and Paris	25	8	0

APPLICATION TO REMIT.

It appears by the compariſon of the above mentioned exchanges, that the proportional exchange upon Hamburgh is the higheſt, and, conſequently, that it would be more advantageous to remit to Paris by that place than by either of the others, or by a direct bill. Such remittance would eſtabliſh an indirect courſe of 26 4 6, inſtead of the direct, 25 8; ſo that a merchant would receive 26 livres 4 ſols 6 deniers tournois in exchange for one pound ſterling.

25 8 direct courſe : 26 4 6 indirect courſe :: 100*l* : 103 4 11

Leſs for charges, at $\frac{3}{4}$ per cent	0	15	0	3	4	11
Advantage reſulting from the arbitration	2	9	11			
				100	0	0

APPLICATION TO DRAW.

If a merchant at London had to value on Paris, inſtead of drawing directly, he would order his correſpondent at Paris to take a bill on Madrid at 14 12 6, and either to remit it thither to provide for drafts from London on Madrid at $35\frac{1}{2}$, or to remit it to London to be negotiated at the ſame price. Such operation would eſtabliſh an indirect courſe of 24 14 4, inſtead of the direct, 25 8; ſo that a merchant would give only 24 livres 14 ſols 4 deniers tournois in exchange for one pound ſterling.

25 8 direct courſe : 24 14 4 indirect courſe :: 100*l* : 97 6 2

Add for charges, at $\frac{3}{4}$ per cent	0	15	0	2	13	10
Advantage reſulting from the arbitration	1	18	10			
				100	0	0

OF THE CALCULATION OF ARBITRATIONS OF EXCHANGE BY LOGARITHMS.

The arbitrations which I have juſt exemplified are thoſe of particular reference to London, and I ſhall diſpenſe with giving inſtances adapted to other places which are not now of great importance in exchange operations. It may be obſerved, however, that, notwithſtanding ſuch limitation of the work to the moſt eſſential arbitrations, the general rules which I have developed, and the line which I have traced, will afford ſufficient means for the ſolution of every ſimilar caſe; and it cannot fail of occurring, to thoſe who know the ſuſceptibility of this branch of calculations to combinations almoſt infinite, that it would be abſolutely impoſſible, even in an extenſive treatiſe, to point out all the caſes which are feaſible.

It will have been obſerved, by the preceding arbitrations, that the only variable numbers in the ſtatement of the queſtions are thoſe of the two courſes of exchange; whence, in order to ſimplify the calculations, I have given the fixed numbers reſulting from the ſuppreſſion, multiplication, or diviſion of the invariable numbers in each equation.

Arbitrations are nevertheleſs ſuſceptible of greater ſimplification, by the uſe of logarithms.

It is not my intention, at this moment, to ſpeak of the nature and properties of logarithms, being a ſubject of which I have treated in the obſervations preceding the table with which I have cloſed my work; but, in order that the reader may judge with preciſion of the application of logarithms to arbitrations of exchange, and of the means which they afford of ſimplifying them, I ſhall proceed to perform, by logarithms, the ſame operations which I have already effected by the common rules of arithmetic, whence it will be eaſy to compare the two methods.

In the application of logarithms to any arbitration by three places, only three logarithms are employed; that is, the logarithms of each of the two courſes of exchange which are the only variable numbers in the ſame arbitrations, and a fixed logarithm. To find the fixed logarithm of every equation, we add the logarithms correſponding to the invariable numbers in the reſpective columns of the diviſor and of the dividend, and ſubtract the ſmaller ſum from the greater. The remainder is the fixed logarithm to be employed with the logarithms of the two courſes of exchange.

One of the advantages of this method by logarithms, is, that, in every operation, there is only one fixed logarithm, while, by the arithmetical method, we have ſeen, that, in certain arbitrations, there has been neceſſarily a fixed number in the diviſor and another fixed number in the dividend; at leaſt as often as the greater fixed number could not be divided by the ſmaller without leaving any remainder. The ſame advantage of logarithms will be ſtill more apparent hereafter, when I ſhall apply them to the calculations of bullion and ſpecie, and to thoſe of merchandize.

The method by logarithms is ſo very ſimple, that an example or two will ſuffice to illuſtrate the following operations.

FIRST EXAMPLE.

Turning to page 295, where an arbitration is ſtated between London and Liſbon through Amſterdam, I perceive that 50 is the fixed number reſulting from the diviſion of the invariable numbers which are a part of the ſame arbitration; that is, of $\frac{1000 \times 1240}{400 \times 12}$; and that it is neceſſary to multiply 50 by $46\frac{1}{2}$, being the courſe of exchange between Liſbon and Amſterdam, and then to divide the product by 36 10, or the courſe of exchange between London and Amſterdam.

In order to perform the operation by logarithms, I look in the table for the logarithm correſponding to the fixed number 50, which gives, as a fixed logarithm, ... 169897

I add the logarithm of $46\frac{1}{2}$ 166745

and from the ſum of the two logarithms . . 336642

I deduct the logarithm of 36 10 156624

which leaves a remainder of 180018

Referring to the table for the arithmetical number correſponding to the logarithm 180018, I find $63\frac{2}{16}$, being the proportional exchange required between London and Liſbon, and which is, in fact, the ſame reſult as that which I had obtained by the arithmetical operation.

It will be obſerved, that if, from the ſum of the two logarithms correſponding with the invariable numbers 1000 and 240 in the dividend, I had deducted the ſum of the two logarithms correſponding to the invariable numbers 400 and 12 in the diviſor, I ſhould have obtained the ſame fixed logarithm, in the following manner:

$$
\begin{array}{lllr}
\text{Logarithm of } 1000 \;\ldots\ldots\ldots & & = & 300000 \\
\qquad\quad \text{of } \;\; 240 \;\ldots\ldots\ldots & & + & 238021 \\
\hline
 & & & 538021 \\
\text{Logarithm of} \;.\;.\;\; 400 = 260206 & \multirow{2}{*}{\Big\}} & - & 368124 \\
\qquad\quad \text{of} \;.\;.\;\;\;\; 12 + 107918 & & & \\
\hline
\qquad\qquad \text{Fixed logarithm} \;.\;.\;. & & & 169897
\end{array}
$$

SECOND EXAMPLE.

In the arbitration between London and Madrid by Amſterdam (page 303), I perceive, that, according to the given rule, it is requiſite to multiply 1088, fixed number, by 88½, being the courſe of exchange between Madrid and Amſterdam, and to divide the product by 75, fixed number, and by 37 6, being the courſe of exchange between London and Amſterdam.

To effect the operation by logarithms, I deduct, in the firſt inſtance, 187506, the logarithm of the fixed number 75, from 303663, the logarithm of the fixed number 1088, which leaves, as a fixed logarithm, 116157

I add the logarithm of 88½ 194694

310851

and deducting the logarithm of 37 6 . . . 157403

153448

I find in the table that 34$\frac{6}{24}$ is the number which approaches the neareſt to the logarithm 153448, which proves to be the ſame reſult as that of the operation by the rules of arithmetic.

We have ſeen, that the principal units of monies of different countries are ſubdivided in great variety. It would, therefore, be difficult to compoſe tables of logarithms to correſpond with all ſuch diviſions; not to mention how much the tables would thereby be rendered long and diffuſe: thus, in the laſt arbitration, we ſhall not find a logarithm correſponding with the number 14 12 6, or the courſe of exchange of Paris on Madrid, ſince, in that part of the table, the units are divided into twentieths. We may obtain, however, an exact logarithm by the following method:

The logarithm of 14 13 is	116585
And the logarithm of 14 12 is	116435
Difference	150

The logarithm of 14 12½ will conſequently be 116435, or the logarithm of 14 12 plus half of the difference 150, or 75; that is to ſay, it will be 116510. It is obvious, that, if the courſe of exchange of Paris upon Madrid had been 14 12 3, we ſhould have added to 116435 only the fourth of the difference.

I have demonſtrated this example, in order that the reader may prove the logarithm of which I have made uſe in that arbitration; and I ſhall obſerve that the ſame method is to be adopted whenever the exchange of Paris on Madrid, and of Paris on London, or vice verſâ, may include a fraction of deniers tournois.

In reſpect to the reſults of the ſeveral arbitrations, as a rigid exactneſs is not neceſſary in practice, it will only be requiſite to take the number, or fractional number, which may be the neareſt to the logarithm found.

I truſt that what has been ſaid will ſuffice for the underſtanding of the principle of the arbitrations which follow, and which are merely a repetition of thoſe already exemplified. The fixed logarithms being denoted in each operation, it will be only requiſite to ſubſtitute the logarithms of the actual courſes of exchange, paying attention to the ſigns + and — of addition and ſubtraction.

LONDON AND AMSTERDAM

through Genoa.

Fixed number . . 20 = 130103 fixed logarithm

Amſterdam on Genoa 83½ + 192169

322272

London on Genoa . 45 — 165321

156951 = 37 1⅓ reſult

Hamburgh.

London on Hamburgh 35 = 154407

Amſterdam on ditto . 34 + 153148

307555

Fixed number . . 32 — 150515 fixed logarithm

157040 = 37 2¼ reſult

Leghorn.

Fixed number . . 20 = 130103 fixed logarithm

Amſterdam on Leghorn 90 + 195424

325527

London on Leghorn 48½ — 168574

156953 = 37 1⅓ reſult

LONDON AND AMSTERDAM

through Liſbon.

Fixed number . . 50 = 169897 fixed logarithm
Amſterdam on Liſbon $44\frac{1}{2}$ + 164836

334733
London on Liſbon . 62 — 179239

155494=35 $10\frac{2}{3}$ reſult

Madrid.

Inſtead of the two fixed numbers 116157 fixed logarithm
Amſterdam on Madrid $88\frac{1}{4}$ + 194571

310728
London on Madrid . $34\frac{1}{2}$ — 153782

156946=37 $1\frac{5}{16}$ reſult

Paris.

London on Paris . 25 15 = 141078
Amſterdam on Paris $53\frac{1}{2}$ + 172835

313913
Inſtead of the two fixed numb.— 156170 fixed logarithm

157743=37 $9\frac{1}{2}$ reſult

LONDON AND GENOA

through Amſterdam.

Fixed number . .	20	=	130103 fixed logarithm
Genoa on Amſterdam	$84\frac{7}{8}$	+	192878
			322981
London on Amſterdam	37 4	—	157210
			165771 = $45\frac{1}{2}$ reſult

Hamburgh.

Fixed number . .	73600	=	486688 fixed logarithm
London on Hamburgh	35 4	—	154819
			331869
Genoa on Hamburgh	$46\frac{1}{4}$	—	166511
			165358 = 45 reſult

Leghorn.

Fixed number . .	115	=	206070 fixed logarithm
London on Leghorn	50	+	169897
			375967
Genoa on Leghorn	$124\frac{1}{2}$	—	209517
			166450 = $46\frac{3}{16}$ reſult

LONDON AND GENOA

through Liſbon.

Genoa on Liſbon .	765	=	288366	
London on Liſbon .	$61\frac{1}{2}$	+	178888	
			467254	
Fixed number . .	1000	—	300000	
			167254	= $47\frac{1}{21}$ reſult

Madrid.

Genoa on Madrid .	660	=	281954	
London on Madrid	$34\frac{3}{4}$	+	154095	
			436049	
Inſtead of the two fixed numb.		—	270428	fixed logarithm
			165621	= $45\frac{5}{16}$ reſult

Paris.

Inſtead of the two fixed numbers			108458	fixed logarithm
Genoa on Paris . .	$94\frac{7}{8}$	+	197715	
			306173	
London on Paris .	25 2	—	139967	
			166206	= $45\frac{15}{16}$ reſult

LONDON AND HAMBURGH

through Amſterdam.

Fixed number . . 32 = 150515 fixed logarithm

London on Amſterdam 37 3 + 157113

307628

Hamburgh on Amſterd. $34\frac{1}{4}$ — 153466

154162 = 34 $9\frac{2}{3}$ reſult

Genoa.

Fixed number . . 20 = 130103 fixed logarithm

Hamburgh on Genoa 78 + 189209

319312

London on Genoa . 45 — 165321

153991 = 34 8 reſult

Leghorn.

Fixed number . . 20 = 130103 fixed logarithm

Hamburgh on Leghorn $85\frac{3}{4}$ + 193323

323426

London on Leghorn $48\frac{1}{4}$ — 168350

155076 = 35 $6\frac{1}{2}$ reſult

LONDON AND HAMBURGH

through Liſbon.

Fixed number . .	50	=	169897	fixed logarithm
Hamburgh on Liſbon	41¾	+	162066	
			331963	
London on Liſbon .	61¾	—	179064	
			152899	= 33 9⅔ reſult

Madrid.

Inſtead of the two fixed numbers			116157	fixed logarithm
Hamburgh on Madrid	82½	+	191645	
			307802	
London on Madrid .	34½	—	153782	
			154020	= 34 8¼ reſult

Paris.

London on Paris .	25 10	=	140654	
Hamburgh on Paris	24⅞	+	139576	
			280230	
Inſtead of the two fixed numb.		—	126067	fixed logarithm
			154163	= 34 9⅔ reſult

LONDON AND LEGHORN

through Amſterdam.

Fixed number . . 20 = 130103 fixed logarithm
Leghorn on Amſterdam 92 + 196379

326482
London on Amſterdam 37 2 — 157015

169467 = 49½ reſult

Genoa.

Leghorn on Genoa 124 = 209342
London on Genoa 45¾ + 166039

375381
Fixed number . . 115 — 206070 fixed logarithm

169311 = 49⅓ reſult

Hamburgh.

Fixed number . . 20 = 130103 fixed logarithm
Leghorn on Hamburgh 86¼ + 193576

323679
London on Hamburgh 35 1 — 154510

169169 = 49⅙ reſult

LONDON AND LEGHORN

through Liſbon.

Leghorn on Liſbon .	830	=	291908	
London on Liſbon .	$61\frac{1}{2}$	+	178888	
			470796	
Fixed number . .	1000	—	300000	fixed logarithm
			170796	= $51\frac{1}{22}$ reſult

Madrid.

Leghorn on Madrid	142	=	215229	
London on Madrid	35	+	154407	
			369636	
Fixed number . .	100	—	200000	fixed logarithm
			169636	= $49\frac{11}{16}$ reſult

Paris.

Inſtead of the two fixed numbers			108458	fixed logarithm
Leghorn on Paris	104	+	201703	
			310161	
London on Paris .	24 15	—	139358	
			170803	= $51\frac{1}{16}$ reſult

LONDON AND LISBON

through Amſterdam.

Fixed number . . 50 = 169897 fixed logarithm
Liſbon on Amſterdam $46\frac{1}{2}$ + 166745

336642
London on Amſterdam 36 10 — 156624

180018 = $63\frac{1}{8}$ reſult

Genoa.

Fixed number . , 1000 = 300000 fixed logarithm
London on Genoa $45\frac{1}{2}$ + 165801

465801
Liſbon on Genoa . 730 — 286332

179469 = $62\frac{1}{3}$ reſult

Hamburgh.

Fixed number . . 50 = 169897 fixed logarithm
Liſbon on Hamburgh 44 + 164345

334242
London on Hamburgh 34 10 — 154200

180042 = $63\frac{5}{32}$ reſult

LONDON AND LISBON

through Leghorn.

Fixed number . .	1000	=	300000	fixed logarithm
London on Leghorn	49	+	169020	
			469020	
Liſbon on Leghorn	830	—	291908	
			177112	= $59\frac{1}{27}$ reſult

Madrid.

Fixed number . .	4000	=	360206	fixed logarithm
London on Madrid	$34\frac{1}{2}$	+	153782	
			513988	
Liſbon on Madrid	2250	—	335218	
			178770	= $61\frac{1}{3}$ reſult

Paris.

Fixed number	729000	=	586273	fixed logarithm
Liſbon on Paris	460	—	266276	
			319997	
London on Paris .	24 18	—	139620	
			180377	= $63\frac{2}{3}$ reſult

LONDON AND MADRID

through Amſterdam.

Inſtead of the two fixed numbers			116157	fixed logarithm
Madrid on Amſterdam	88½	+	194694	
			310851	
London on Amſterdam	37 6	—	157403	
			153448	= 34¼ reſult

Genoa.

Fixed number . .	100	=	200000	fixed logarithm
London on Genoa .	45½	+	165801	
			365801	
Madrid on Genoa .	126½	—	210209	
			155592	= $35\frac{23}{24}$ reſult

Hamburgh.

Inſtead of the two fixed numbers			116157	fixed logarithm
Madrid on Hamburgh	83	+	191908	
			308065	
London on Hamburgh	35 2	—	154613	
			153452	= 34¼ reſult

LONDON AND MADRID

through Leghorn.

Fixed number . .	100	=	200000	fixed logarithm
London on Leghorn	50	+	169897	
			369897	
Madrid on Leghorn	136	—	213354	
			156543	= $36\frac{3}{4}$ reſult

Liſbon.

Madrid on Liſbon	2300	=	336173	
London on Liſbon .	62	+	179239	
			515412	
Fixed number . .	4000	—	360206	fixed logarithm
			155206	= $35\frac{2}{3}$ reſult

Paris.

Fixed number . .	60	=	177815	fixed logarithm
Madrid on Paris .	15 6	+	118469	
			296284	
London on Paris .	25 5	—	140226	
			156058	= $36\frac{1}{3}$ reſult

LONDON AND PARIS

through Amſterdam.

Inſtead of the two fixed numbers 156170 fixed logarithm
London on Amſterdam 37 5 + 157307

313477
Paris on Amſterdam 54⅓ — 173340

140137 = 25 4 reſult

Genoa.

Inſtead of the two fixed numbers 108458 fixed logarithm
Paris on Genoa . . 93¼ + 196965

305423
London on Genoa . 45 — 165321

140102 = 25 3 6 reſult

Hamburgh.

London on Hamburgh 35 6 = 155023
Paris on Hamburgh 197 + 229447

384470
Inſtead of the two fixed numb.—242597 fixed logarithm

141873 = 26 4 6 reſult

LONDON AND PARIS

through Leghorn.

Inſtead of the two fixed numbers			108458	fixed logarithm
Paris on Leghorn	101	+	200432	
			308890	
London on Leghorn	48½	—	168574	
			140316	= 25 6 reſult

Liſbon.

Fixed number	729000	=	586273	fixed logarithm
London on Liſbon	61	—	178533	
			407740	
Paris on Liſbon .	480	—	268124	
			139616	= 24 18 reſult

Madrid.

Fixed number . .	60	=	177815	fixed logarithm
Paris on Madrid .	14 12 6	+	116510	
			294325	
London on Madrid	35½	—	155023	
			139302	= 24 14 4 reſult

OF THE CHOICE OF BILLS

In reſpect to their Dues being more or leſs remote.

It is often of ſome conſequence to merchants, who may have to remit, or to draw, to know whether it be more eligible to purchaſe, or to ſell, bills of which the dues may be at hand, than others at a longer term. The two following examples will ſerve to determine the method of choice.

FIRST EXAMPLE.

To remit.

The exchange of London upon Paris is at 25 6 at 1 day's date, and it is at the ſame time at 25 14 at two uſances: which paper ſhould we take for a remittance to a correſpondent with whom we have an intereſt account at 6 per cent per annum?

In taking paper at 1 day's date, London would be credited by the ſum to be remitted to Paris 59 days ſooner than it would be by taking paper at two uſances. It is to be conſidered, therefore, whether the intereſt which would be allowed upon 25 livres 6 ſols tournois, during 59 days, be of greater or leſs conſequence than the difference between the two courſes of exchange, and which, in the preſent inſtance, is 8 ſols. Obſerving, alſo, that the commercial year in France conſiſts of 360 days, we have to follow the rule given under the head of Intereſt, page 19, by aſſuming the fixed number 6000 as a diviſor, and calculating according to the following proportion:

6000 : 59 days :: 506 ſols : x.

Hence it is evident, that, if we were to take paper at 25 6 at 1 day's date, and add to ſuch rate the reſult of the proportion juſt ſtated, which is 4 ſols 11⅔ deniers, the remittance would be equivalent to other paper at

25 10 11⅔ at two uſances; it is therefore more eligible to chuſe that at 25 14 at two uſances, ſince we ſhall receive 3 ſols ⅓ denier per pound ſterling more than we ſhould otherwiſe receive.

SECOND EXAMPLE.

To draw.

The exchange of London upon Paris is again taken at 25 6 at 1 day's date, and at 25 14 at two uſances: at which of theſe courſes ſhould we draw, ſuppoſing that we have funds at Paris at intereſt at 6 per cent per annum?

By ſtating the ſame proportion as in the preceding example, we obtain the ſame reſult, which is alſo to be added to the rate of the exchange. It is therefore more eligible to draw at the exchange of 25 6 at 1 day's date, than at 25 14 at two uſances; inaſmuch as, by drawing at the former exchange, our correſpondent will have to charge us, for every pound ſterling which we ſhall receive, with only 25 6, and with the intereſt which will accrue upon the ſame ſum of 25 6 during 59 days, which eſtabliſhes an exchange between London and Paris of 25 10 11⅔, inſtead of 25 14.

RULE,

To find the Average Price of Exchange of ſeveral Bills taken at different Rates.

It often happens that merchants purchaſing bills at different prices upon the ſame place, wiſh to know the average price. For this purpoſe, the following rule may be uſed.

Add, reſpectively, the ſums which you have paid, and thoſe which you are to receive in exchange; then ſtate a rule of equation in which the firſt term of the dividend is always to be the certain price of the exchange, while the laſt term of the dividend is to be conſtantly of the ſame kind as the uncertain price.

EXAMPLE.

London purchaſes upon Hamburgh three bills of exchange, as under mentioned:

1342	3 at 35 9½	100
2808	12 at 35 8	210
4914	1 at 35 5	370
9065	marcs banco coſt	680 pounds ſterling.

EQUATION.

1 pound ſterling = x

680 pounds ſterling = 9065 marcs banco

3 marcs banco = 8 ſhillings Flemiſh.

The reſult of this equation denotes that the mean, or average, rate of exchange is 35 6$\frac{10}{17}$.

RULE,

To add, or to deduct, the Charges.

Firſt, conſider what will be the nature of the reſult of the operation.

If the profit attending the reſult be greater in proportion as the reſult itſelf be more reduced, it is evident that the amount of the charges muſt be added.

If, on the contrary, the ſame reſult be more advantageous in proportion as it may be increaſed, it is obvious that the amount of the charges muſt be deducted.

PROPOSITION.

By an arbitration between London and Hamburgh, a proportional exchange has been obtained of 35 4, and the charges are eſtimated at $\frac{3}{4}$ per cent: required to know the reſpective modes of adding and deducting ſuch charges.

SOLUTION.

To add the charges, I ſtate the following proportion;

$$100 : 100\tfrac{3}{4} :: 35\ 4 : x.$$

To deduct the charges, I ſtate another proportion:

$$100 ; 99\tfrac{1}{4} :: 35\ 4 : x,$$

whence the following general rule:

To add the charges, multiply the reſult of the operation by 100 more the charges, and divide the product by 100.

To deduct the charges, multiply the reſult of the operation by 100 leſs the charges, and divide the product by 100.

RULE,

To place the Charges in the Equation.

PRINCIPLE.

If you include the charges in the equation, conſider whether the reſult will be high or low.

If, to be advantageous, the reſult muſt be high, either deduct the charges from the dividend, or add them to the diviſor.

If, to be profitable, the reſult muſt be low, either add the charges to the dividend, or deduct them from the diviſor.

In fact, it is evident, that, in the firſt inſtance, the reſult will be reduced, and, in the ſecond, it will be increaſed.

GENERAL RULE.

To remit.

If the firſt term of the dividend be of the ſame denomination as the money of the city which remits, place 100 in the diviſor, and 100, leſs the charges, in the dividend; and, if otherwiſe, place 100, leſs the charges, in the diviſor, and 100 in the dividend.

To draw.

If the firſt term of the dividend be of the ſame denomination as the money of the city which draws, place 100 in the diviſor, and 100, with addition of the charges, in the dividend; if otherwiſe, place 100, with addition of the charges, in the diviſor, and 100 in the dividend.

This rule is demonſtrated by the following examples.

RULE,

To place the Charges in the Equation.

INDIRECT REMITTANCE.

Firſt Application.

London takes a bill on Hamburgh at 35 ſhillings 4 grotes Flemiſh banco per pound ſterling, and remits it to Amſterdam to be negotiated at 34 ſtivers banco for 2 marcs banco: what courſe of exchange will that remittance eſtabliſh between London and Amſterdam, 1 per cent being charged at Amſterdam for commiſſion, brokerage, and poſtages?

EQUATION.

1 pound ſterling = 37 ſhill. 2 grot.

1 pound ſterling = 35⅓ ſhillings Flemiſh
8 ſhill. Flemiſh = 3 marcs banco
2 marcs banco = 34 ſtivers banco
6 ſtivers banco = 1 ſhilling Flemiſh
100 = 99 with charges.

As one pound ſterling, firſt term of the dividend, is of the ſame denomination as the money of London, which remits, 100 muſt be placed in the diviſor, and 100 leſs the charges, or 99, in the dividend.

In fact, London gives a pound ſterling for 35⅓ ſhillings Flemiſh banco = 13¼ marcs banco payable at Hamburgh. Amſterdam, by the negotiation of 2 marcs banco, receives 34 ſtivers banco in exchange, and credits London by the amount, leſs 1 per cent for charges; therefore 100 leſs thoſe charges, or 99, muſt be placed in the ſame column as the 34 ſtivers, to be oppoſed to 100 in the diviſor.

RULE,

To place the Charges in the Equation.

INDIRECT REMITTANCE.

Second Application.

London takes a bill on Cadiz at 35 pence ſterling per dollar of exchange, and remits it to Liſbon to be negotiated at 2280 reis per piſtole of exchange: what courſe of exchange will that remittance eſtabliſh between London and Liſbon, 1 per cent being charged at Liſbon for commiſſion, brokerage, and poſtages?

EQUATION.

1000 reis = 62 pence
2280 reis = 1 piſtole
1 piſtole = 4 dollars
1 dollar = 35 pence
99 with charges = 100

As 1000 reis, firſt term of the dividend, are not of the ſame denomination as the money of London, which remits, 100 leſs the charges, or 99, muſt be placed in the diviſor, and 100 in the dividend.

In fact, London pays 35 pence ſterling for 1 dollar of exchange to be received at Cadiz. Liſbon, by the negotiation of 1 piſtole = 4 dollars, receives in exchange 2280 reis, and credits London by the amount, leſs 1 per cent for charges; therefore 1 per cent muſt be deducted in the column where 2280 reis ſtand.

RULE,

To place the Charges in the Equation.

INDIRECT DRAFT.

Firſt Application.

London draws upon Paris at 25 livres tournois per pound ſterling, and directs it to reimburſe itſelf on Hamburgh at 192 livres tournois for 100 marcs banco, charging 1 per cent for commiſſion, brokerage, and poſtages: what courſe of exchange will thoſe prices eſtabliſh between London and Hamburgh?

EQUATION.

1 pound ſterl. = 35 ſhill. 1 grot.
1 pound ſterling = 25 livres tournois
192 livres tournois = 100 marcs banco
3 marcs banco = 8 ſhillings Flemiſh
100 with charges = 101.

As one pound ſterling, firſt term of the dividend, is of the ſame denomination as the money of London, which draws, 100 muſt be placed in the diviſor, and 100, with addition of 1 for charges, or 101, in the dividend.

In fact, Paris diſburſes 25 livres tournois for one pound ſterling, received by London, and draws upon Hamburgh at 192 livres for 100 marcs; but as 1 per cent is charged at Paris, it is neceſſary that Paris ſhould draw 101 marcs inſtead of 100; therefore, 100 with addition of 1 muſt be placed in the ſame column as 100 marcs, to be oppoſed to 100 in the diviſor.

RULE,

To place the Charges in the Equation.

INDIRECT DRAFT.

Second Application.

London draws upon Liſbon at 62 pence ſterling for 1000 reis, and directs it to reimburſe itſelf on Madrid at 2250 reis per piſtole of exchange, charging 1 per cent for commiſſion, brokerage, and poſtages: what courſe of exchange will thoſe prices eſtabliſh between London and Madrid?

EQUATION.

1 dollar = 34½ pence
4 dollars = 1 piſtole
1 piſtole = 2250 reis
1000 reis = 62 pence
101 = 100 with charges.

As one dollar, firſt term of the dividend, is not of the ſame denomination as the money of London, which draws, 100, with addition of 1 for charges, or 101, muſt be placed in the diviſor, and 100 in the dividend.

In fact, Liſbon diſburſes 1000 reis for 62 pence ſterling received by London, and draws upon Madrid at 2250 reis per piſtole of exchange; but as 1 per cent is charged at Liſbon, it is neceſſary that Liſbon ſhould draw for the equivalent of 1010 reis, inſtead of 1000; therefore 1 per cent muſt be added in the column where 1000 reis ſtand.

RULE,

To place the Charges in the Equation.

CONCLUSION.

It may be inferred from the preceding applications,

1ſt, That every place remitting indirectly a fixed and determinate ſum in the money of the country where the operation ends, muſt remit to the intermediate place the equivalent of ſuch ſum, together with the charges.

2dly, That every place drawing indirectly a fixed and determinate ſum in the money of the country where the ultimate draft is payable, muſt draw upon the intermediate place for the equivalent of ſuch ſum, leſs the charges.

Theſe principles are demonſtrated by the following examples.

RULE,

To place the Charges in the Equation.

INDIRECT REMITTANCE.

A merchant at London has occaſion to remit 12000 livres tournois to Paris, but, as the medium of Hamburgh offers an advantage, he remits to Hamburgh at 35 ſhillings Flemiſh banco for one pound ſterling, with orders to tranſmit the equivalent to Paris at 24 ſhillings banco for 3 francs, deducting 1 per 100 for charges at Hamburgh: what ſum does London diſburſe by ſuch remittance?

EQUATION.

12000 livres =456 1
81 livres = 80 francs
3 francs = 24 ſhillings banco
6 ſhill. banco = 1 ſhill. Flemiſh
35 ſhill. Flemiſh = 1 pound ſterling
99 with charges = 100.

If Hamburgh were to be paid by London for a ſum of marcs equivalent with 12000 livres only, at the exchange of 24, it is evident there would be a deficit of the amount of the charges. London muſt, therefore, remit to Hamburgh the value of 12000 livres, incluſive of the charges; while Hamburgh, by remitting the exact ſum of 12000 livres to Paris, will fulfil the order from London, and be itſelf repaid for the charges.

N. B. London might order Hamburgh to remit the value of 12000 livres to Paris at 24, drawing upon London at 35 for the amount, incluſive of 1 per cent for the charges. In this caſe, the ſtatement of the equation, and conſequently the reſult, would be the ſame.

See the proof of this operation in the following page.

RULE,

To place the Charges in the Equation.

INDIRECT REMITTANCE.

Proof of the preceding Operation.

A merchant at London has occaſion to remit 456 pounds and 1 ſhilling ſterling to Paris, but, ſeeing that the operation would be advantageous through Hamburgh, he remits to Hamburgh at 35 ſhillings Flemiſh banco for a pound ſterling, with orders to tranſmit the equivalent to Paris at 24 ſhillings banco for 3 francs, under deduction of 1 per cent for charges at Hamburgh: what ſum of livres tournois will Paris receive by ſuch remittance?

EQUATION.

456 1 = 12000 livres
1 pound ſterling = 35 ſhillings Flemiſh
1 ſhilling Flemiſh = 6 ſhillings banco
24 ſhillings banco = 3 francs
80 francs = 81 livres tournois
100 = 99 with charges.

Thus, by the reſult of the operation, Paris would receive the ſum that London had occaſion to remit.

RULE,

To place the Charges in the Equation.

INDIRECT DRAFT.

A merchant at London has occaſion to draw 12000 livres tournois upon Paris, but, as the medium of Hamburgh would afford an advantage, he draws upon Hamburgh at 35 ſhillings Flemiſh banco for one pound ſterling, with orders to value upon Paris at 24 ſhillings banco for 3 francs, for the amount, incluſive of 1 per cent for commiſſion, brokerage, and poſtages: what ſum will London receive by the negotiation of ſuch draft?

EQUATION.

12000 livres = 447 0 5
81 livres = 80 francs
3 francs = 24 ſhillings banco
6 ſhillings banco = 1 ſhilling Flemiſh
35 ſhillings Flemiſh = 1 pound ſterling
101 = 100 with charges.

If London were to draw upon Hamburgh for a ſum of marcs equivalent with 12000 livres, it is evident that Hamburgh muſt draw more upon Paris to effect its own reimburſement, incluſive of its charges. London muſt, therefore, draw upon Hamburgh for the equivalent of 12000 livres, leſs the charges; while Hamburgh, in drawing upon Paris for the value of the draft from London, incluſive of the charges, would, in fact, occaſion a diſburſement of not more than 12000 livres at Paris.

N. B. London might order Hamburgh to draw upon Paris for the value of 12000 livres, at 24, returning the amount to London at 35, under deduction of 1 per cent for the charges. In this caſe, the ſtatement of the equation, and conſequently the reſult, would be the ſame.

See the proof of this operation in the following page.

RULE,

To place the Charges in the Equation.

INDIRECT DRAFT.

Proof of the preceding Operation.

A merchant at London has occaſion to draw the equivalent of 447 pounds 5 pence ſterling in livres tournois, but, ſeeing that the operation would be advantageous through Hamburgh, he draws upon Hamburgh at 35 ſhillings Flemiſh banco for a pound ſterling, with orders to value upon Paris at 24 ſhillings banco for 3 francs, incluſive of 1 per cent for commiſſion, brokerage, and poſtages: what ſum of livres tournois will Paris diſburſe by ſuch draft?

EQUATION.

447 0 5 = 12000 livres
1 pound ſterling = 35 ſhillings Flemiſh
1 ſhilling Flemiſh = 6 ſhillings banco
24 ſhillings banco = 3 francs
80 francs = 81 livres tournois
100 with charges = 101.

Thus, by the reſult of the operation, Paris would diſburſe the ſum that London had occaſion to draw.

RULE,

To add, or to deduct, the Charges,

IN OPERATIONS BY LOGARITHMS.

We have ſeen that the charges are to be added in thoſe caſes in which the profit is greater in proportion as the reſult is numerically reduced; and, alſo, that the charges are to be deducted when a ſimilar reſult becomes profitable in proportion as it is numerically increaſed.

Thus, if we had obtained $61\frac{3}{16}$ as a proportional exchange between London and Liſbon, and were deſirous of adding $\frac{5}{8}$ for charges, it would be neceſſary to ſtate the following proportion:

$$100 : 100\tfrac{5}{8} :: 61\tfrac{3}{16} : x;$$

and, in caſe it were intended to deduct the charges, it would be requiſite that the proportion ſhould be

$$100 : 99\tfrac{3}{8} :: 61\tfrac{3}{16} : x.$$

In performing the operation by logarithms, we ſhould calculate as follows:

FIRST PROPORTION.

$$\begin{array}{lcl} 61\frac{3}{16} & = & 178666 \\ 100\frac{5}{8} & + & 200271 \\ \hline & & 378937 \\ 100 & - & 200000 \\ \hline & & 178937 = 61\frac{9}{16} \text{ reſult.} \end{array}$$

SECOND PROPORTION.

$$\begin{array}{lcl} 61\frac{3}{16} & = & 178666 \\ 99\frac{3}{8} & + & 199728 \\ \hline & & 378394 \\ 100 & - & 200000 \\ \hline & & 178394 = 60\frac{13}{16} \text{ reſult.} \end{array}$$

Theſe operations, however, may be ſimplified as is undermentioned.

In the calculation of the firſt proportion, I have multiplied by $100\frac{5}{8}$, and divided by 100; that is, I have added the logarithm of $100\frac{5}{8}$, and deducted that of 100; but if I had deducted, mentally, the ſecond logarithm from the firſt, which would have been effected by ſuppreſſing the characteriſtic of 100, I ſhould have obtained the ſame reſult by the following addition:

$$\begin{array}{lccr} & 61\frac{3}{16} & = & 178666 \\ \text{Difference} & \frac{5}{8} & + & 271 \\ \hline & & & 178937 = 61\frac{3}{16} \text{ reſult.} \end{array}$$

In the calculation of the ſecond proportion, I have added the logarithm of $99\frac{3}{8}$, and deducted that of 100; but it is evident, that, if I had merely deducted the difference between the logarithms of theſe two numbers, I ſhould have obtained the ſame reſult in the following manner:

$$\begin{array}{lccr} & 61\frac{3}{16} & = & 178666 \\ \text{Difference} & \frac{5}{8} & - & 272 \\ \hline & & & 178394 = 60\frac{13}{16} \text{ reſult.} \end{array}$$

Hence I deduce the following rule:

In order to add the charges, that is, to augment the value of a number by $\frac{5}{8}$, $1\frac{5}{8}$, $11\frac{5}{8}$, more or leſs, per cent, find in the table the logarithm of 100 with addition of the amount of the charges; aſcertain by how much that logarithm may exceed the logarithm 200000, which correſponds with the natural number 100, and then add the ſurplus to the logarithm of the number which you wiſh to augment.

In order to deduct the charges, that is, to reduce the value of a number by $\frac{5}{8}$, $1\frac{5}{8}$, $11\frac{5}{8}$, more or leſs, per cent, find in the table the logarithm of 100 leſs the amount of the charges, which will be 99$\frac{3}{8}$, if the charges be at the rate of $\frac{5}{8}$ per cent, or 98$\frac{1}{4}$ if the rate be 1$\frac{3}{4}$, &c.; aſcertain the difference between that logarithm and the logarithm 200000, and deduct ſuch difference from the logarithm of the number which you wiſh to reduce.

N. B. To facilitate the deduction of charges, an auxiliary table is given, ſhewing the difference between the logarithms of numbers under 100, and the logarithm of 100.

EXAMPLE.

Deduct from 45, rate of exchange between London and Genoa, $\frac{7}{8}$ for charges.

Finding in the firſt table the logarithm
of 45 to be 165321
I perceive, by the auxiliary table, that
the logarithm of $\frac{7}{8}$ is 382

164939 = 44$\frac{5}{8}$

In fact, 382 is the difference between the logarithm of 99$\frac{1}{8}$ and that of 100.

RULE,

To find the Rate per Cent of Profit.

Inſtead of the certain price of exchange, always place 100 pounds ſterling as the firſt term of the dividend.

Let the firſt term of the diviſor, and the laſt term of the dividend, be each one pound ſterling.

Include in the equation the direct courſe of exchange; and, when London exchanges by the pound ſterling, that pound muſt be the laſt term of the dividend; but, when London gives the uncertain price, inſert the number of pence given as the laſt term but one of the dividend, and, by oppoſing 240 pence to a pound ſterling, the latter becomes the ultimate term of the dividend.

It follows from ſuch equation, and from the denomination of the laſt term of the dividend being a pound ſterling, that the quotient is neceſſarily in pounds ſterling, which, when compared with 100 pounds, firſt term of the dividend, points out the difference per cent.

N. B. The intermediate place which ſhall give the higheſt reſult above 100 will admit the moſt advantageous remittance; and, on the other hand, the moſt advantageous draft will be through that place which may offer the loweſt reſult under 100; it being of not any conſequence, in this reſpect, whether London give the certain or the uncertain price.

The ſurplus of the higheſt reſult, above 100, will be the per centage of the profit in remitting, incluſive of the charges; while the difference between 100 and the loweſt reſult will be the rate of gain in drawing; alſo incluſive of the charges.

RULE,

To find the Rate per Cent of Profit.

LONDON AND PARIS

through Hamburgh.

Required to know the rate per cent of profit reſulting from the exchange between London and Paris, the pound ſterling being worth 35 ſhillings 6 grotes Flemiſh banco at London; 100 marcs banco being worth 197 livres tournois at Paris, and the direct exchange being at 25 livres 8 ſols tournois per pound ſterling.

EQUATION.

100 pounds ſterling = £103 5
1 pound ſterling = $35\frac{1}{2}$ ſhillings Flemiſh
8 ſhill. Flemiſh = 3 marcs banco
100 marcs banco = 197 livres tournois
$25\frac{2}{5}$ livres tournois = 1 pound ſterling.

Thus, by remitting to Paris through Hamburgh, London would gain £3 5 per cent, leſs the charges.

N. B. This operation being the ſame as that which is inſerted in page 313, the reſult is the ſame as that of the application to remit, page 317, excepting a trifling difference of one penny, being the equivalent of the remainder of the calculation of the arbitration in the inſtance alluded to; whence it appears that the operation to find the per centage is the moſt correct.

RULE,

To find the Rate per Cent of Profit.

LONDON AND AMSTERDAM

through Liſbon.

Required to know the rate per cent of profit reſulting from the exchange between London and Amſterdam; milreis being worth 62 pence ſterling at London, the cruſade being worth 44½ grotes Flemiſh banco at Amſterdam, and the direct exchange being at 37 ſhillings 3 grotes Flemiſh banco per pound ſterling.

EQUATION.

100 pounds ſterling = £96 6 10
1 pound ſterling = 240 pence
62 pence = 1000 reis
400 reis = 44½ grotes
12 grotes = 1 ſhilling Flemiſh
37¼ ſhill. Flemiſh = 1 pound ſterling.

Thus, by the operation through Liſbon, in the inſtance of a draft, London would gain £3 13 2 per cent, leſs the charges.

N. B. This operation being the ſame as that which is inſerted in page 266, the reſult is the ſame as that of the application to draw, page 269.

RULE,

To find the Rate per Cent of Profit.

LONDON AND LEGHORN

through Paris.

Required to know the rate per cent of profit reſulting from the exchange between London and Leghorn; the pound ſterling being worth 24 livres 15 ſols tournois at London, the pezza of 8 reals being worth 104 ſols in francs at Leghorn, and the direct exchange being at 50 pence ſterling for the ſame pezza.

EQUATION.

100 pounds ſterling = £97 18 8
1 pound ſterling = 24¾ livres tournois
81 livres tournois = 80 francs
1 franc = 20 ſols
104 ſols = 1 pezza
1 pezza = 50 pence
240 pence = 1 pound ſterling.

Thus, by drawing upon Paris, London would gain £2 1 4 per cent, leſs the charges.

LONDON AND VENICE.

Rate per Cent of Profit.

	Quotation at London.	Quotation from Venice.
On Amſterdam	38	5
Genoa	45½	38
Hamburgh	35	4 10
Leghorn	50	11 15
Naples	39	9 15
Paris	25 10	2 5
Direct courſe of London on Venice	58	

The above quotations are ſucceſſively combined in the following arbitrations to aſcertain the rate per cent of profit.

Through Amſterdam.

100 pounds ſterling = £98 5 6

1 pound ſterling = 38 ſhillings Flemiſh
10 ſhill. Flemiſh = 3 florins banco
1 florin banco = 5 lire piccoli
58 lire piccoli = 1 pound ſterling.

Genoa.

100 pounds ſterling = £99 7 1

1 pound ſterling = 240 pence
45½ pence = 1 pezza fuori di banco
1 pezza = 5¾ lire ditto
1 lira = 38 ſoldi piccoli
20 ſoldi piccoli = 1 lira piccoli
58 lire piccoli = 1 pound ſterling.

LONDON AND VENICE

through Hamburgh.

100 pounds ſterling = £101 16 7
1 pound ſterling = 35 ſhillings Flemiſh
8 ſhill. Flemiſh = 3 marcs banco
1 marc banco = 4½ lire piccoli
58 lire piccoli = 1 pound ſterling.

Leghorn.

100 pounds ſterling = £ 97 4 9
1 pound ſterling = 240 pence
50 pence = 1 pezza of 8 reals
1 pezza of 8 reals = 11¾ lire piccoli
58 lire piccoli = 1 pound ſterling.

Naples.

100 pounds ſterling = £103 8 11
1 pound ſterling = 240 pence
39 pence = 1 ducat di regno
1 ducat = 9¾ lire piccoli
58 lire piccoli = 1 pound ſterling.

Paris.

100 pounds ſterling = £97 14 0
1 pound ſterling = 25½ livres tournois
81 livres tournois = 80 francs
1 franc = 2¼ lire piccoli
58 lire piccoli = 1 pound ſterling.

LONDON AND VENICE.

CONCLUSION.

100 pounds ſterling being ſuppoſed the par between London and Venice, Naples, which eſtabliſhes the higheſt reſult, will anſwer to remit; while Leghorn, through which the loweſt reſult is obtained, will anſwer to draw.

Thus, by remitting to Venice through Naples, London will gain £3 8 11 per cent, leſs the charges; and, in the inſtance of a draft, by the medium of Leghorn, the rate per cent of profit will be £2 15 3 per cent, alſo leſs the charges.

I conceive this mode of calculating arbitrations will be found ſuperior, by the ſimplicity of its reſults, to that which is at preſent uſed, and which has for object to aſcertain the proportional exchange.

In fact, there is not any neceſſity for conſidering which be the certain or the uncertain price; whether it be requiſite to add, or to deduct, the charges, or in which column they ſhould be placed; nor for ſtating the recapitulation of the ſeveral pars of exchange. It will alſo be ſeen, that, by this mode, the great object of commercial calculations is attained, that is, to determine the per centage of profit by the ſame operation, as the charges are always to be deducted from the amount of ſuch profit.

OF

SPECULATIONS IN EXCHANGE

AND

BANKING OPERATIONS.

OF

SPECULATIONS IN EXCHANGE

AND

BANKING OPERATIONS.

I HAVE conſidered, under the preceding head, Arbitrations of Exchange as a means of commercial economy, tending to the knowledge of thoſe places upon which, or to which, it may be moſt ſuitable to draw or to remit. I ſhall now conſider the ſubject in another relation, which is that of Banking Operations, of the nature of thoſe which are called, in mercantile language, Speculations.

The variations which are daily poſſible, and may be ſaid to happen daily, in the courſes of exchange, offer a ſucceſſion of opportunities of profit to thoſe who devote their attention to the combinations of the courſes of thoſe exchanges blended in different manners. Such profit, however, is not obtained but by means of conſtant and fixed attention to the continual fluctuation which occurs in the reſpective exchanges of the ſeveral places of buſineſs with each other.

When a ſpeculative operation may preſent a profit, it is not neceſſary, in order to realize it, that the perſon who may have conceived it ſhould have any funds, or diſpoſable property, in a foreign place, any more than a debt to liquidate in that place. In fact, it is practicable to convey ſuch funds from the place where the tranſaction originates to that whither it is directed, by remitting bills of exchange upon another place; or remittances may be made, either direct or indirect, to the place on which the operation may be effected, to obtain either direct returns, or indirect returns, in conſequence of a new combination abroad, as to the place which may eventually afford the moſt advantage to the original projector.

Theſe combinations offer, therefore, an extenſive field to the experienced merchant who devotes his attention to the knowledge of the cauſes of the continual fluctuations which take place in the courſes of exchange, and who is able to anticipate the variations and conſequences which may thereby enſue.

In a country, ſuch as England, as rich in capital as in the productions of its induſtry, of its ſoil, and of its colonies, the imports and exports offer abundant means to ſpeculators in exchanges of procuring a continual ſupply of bills of exchange, as well upon the countries with which we are in relation, as from thoſe countries upon us; the quantity of this circulating value being always in direct proportion to the maſs of our commerce, under the triple point of view of our imports, conſumption, and exports.

It is obvious, however, that ſpeculations in exchanges can only be productive of profit in proportion to the capital employed; and they are ſubject, at the ſame time, to ſeveral riſks.

Such riſks are,

1ſt, In reſpect to the changes which may occur in the courſes of exchange, upon which the calculation may have been eſtabliſhed, in the interval between the date of the quotations received and the time when the operation will be accompliſhed.

2dly, In the negligence, inattention, or want of ability on the part of any one of the correſpondents of the projector, to whom he may have entruſted the execution of his orders, either abſolute or conditional.

3dly, In the contingency that the bills of exchange, which are neceſſarily the medium of ſuch operations, may poſſibly not be paid*.

It will be eaſily conceived that a ſimple operation is leſs ſubject to riſk, as there is only the variation of one exchange to be apprehended, which the experienced merchant can in general foreſee; as he will be competent to give orders preciſe and poſitive, and not ſuſceptible of a ſtrained interpretation; and as he will be better able to judge of the ſolidity of the bills which he may take.

We muſt alſo conſider, in ſpeculations in exchange, the ſum of the banking charges, that is, the commiſſions, brokerages, and poſtages of letters, which attach to the operations; and, further, the intereſt in the funds employed, in proportion as the periods of receipt, or of payment, may be anticipated or delayed, and which may affect the ſame operations, either advantageouſly or otherwiſe. The banking charges muſt be valued in the aggregate, and then deducted from the profit which the arbitration may have preſented.

Upon the ſubject of the difference ariſing from the conſideration of the intereſt upon the funds employed or received in anticipation, it may affect the reſult of the operation in ſeveral ways.

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* The non-payment of bills purchaſed becomes, however, ſometimes advantageous to the ſpeculator by the re-exchange at which he may be reimburſed. But, as ſuch advantage cannot be in his contemplation in the firſt inſtance, it may occaſion a derangement of the plan conceived, and ſubject the ſpeculator to a riſk till the time of re-payment.

1ſt, If a merchant at London draws upon Hamburgh to reimburſe himſelf for the amount of a remittance thither, at the ſame time, in bills of exchange upon Paris, he will derive a profit of the intereſt upon the funds, from the time of the receipt of the amount for which the remittance may be negotiated at Hamburgh to the time when the draft from London will become due. It would happen in like manner, if the merchant at London, inſtead of remitting bills upon Paris, ſhould order his correſpondent at Hamburgh to draw upon Paris.

2dly, If a merchant at Liſbon, while he makes direct remittances to Hamburgh, and orders his correſpondent there to remit the amount to London, draws upon London for the amount of the ſame remittances, there will be a loſs of the intereſt upon the funds from the time of the payment to be made at London of the draft from Liſbon, to the day of the receipt of the amount of the remittance from Hamburgh.

I ſhall not extend theſe obſervations, as they are eaſily applicable to other caſes.

OF VARIATIONS IN EXCHANGES.

The variations which the courſes of exchange ſo frequently experience originate in ſeveral cauſes, which may be diſtinguiſhed under the appellation of ordinary and extraordinary.

The ordinary cauſes are occaſioned by the abundance, or ſcarcity, of bills of exchange; by the abundance, or ſcarcity, of money; by the conſequences of the diſcovery of the advantages apparent by the calculation of proportional exchanges; and, laſtly, by the financial operations of governments, or public eſtabliſhments, ſuch as the payment of ſubſidies and others.

The extraordinary cauſes are occaſioned by the augmentation or diminution of the value of the circulating medium; by the depreciation of the ſtandard of coins; and by the creation and forced circulation of a fictitious value.

OF BANKING ORDERS.

The banking orders which merchants tranſmit to their correſpondents abroad, for drafts and remittances, and which are always accompanied by the courſes of exchange by which thoſe correſpondents will have to effect the operations, are of ſeveral deſcriptions. I ſhall diſtinguiſh them into ſimple and compound, obſerving, however, that they admit of ſo much variety, and are preſented under ſo many forms, that it is difficult to reduce them into a ſyſtem.

Banking orders require, with few exceptions, a calculation either by the perſon who tranſmits them, or by the perſon who receives them. The following examples and queſtions will give an idea of the manner in which ſuch orders are conceived, as well as of the methods employed to diſcover whether they be feaſible.

FIRST EXAMPLE.

Simple Banking Order.

By advices received at London, it is known that a hurricane, which has ſpread deſtruction in our colonies upon their produce in general, has particularly affected that of cotton. From this intelligence, a merchant infers that an advance muſt follow in the price of that article, which will probably lead to a conſiderable importation of cotton from Liſbon. The effect of ſuch importation will be, that, as paper upon London will be abundant at Liſbon, the courſe of exchange between the two places will riſe. Suppoſing the actual courſe at London to be 60, the merchant will foreſee that it may advance to 62; wherefore, in order to procure bills upon Liſbon, he will tranſmit an order to his correſpondent at Hamburgh expreſſed in ſimilar terms to the following:

"I authorize you to remit to me the value of "ten thouſand cruſades in paper upon Liſbon at "uſance, or uſance and a half, for which you will "take your reimburſement upon me at two months "date, provided that you may be enabled to eſtabliſh "by the operation a proportional exchange of 60 "between London and Liſbon, incluſive of all your "own charges. This order is to be in force till the "arrival of the ſecond poſt after the date of this "letter; and if it ſhould not be executed by that time, "you will annul it, unleſs you ſhould receive a ſubſequent confirmation of the order from me."

In fact, as the merchant at London preſumes that the courſe of exchange may advance to 62, it follows, that, if his order be realized, and that ſuch advance take place in the exchange at London upon Liſbon, there will be a profit by the negotiation at London of the paper which he will receive upon Liſbon, in the proportion of 60 to 62 per cent, independently of the intereſt upon the funds, ariſing from ſuch negotiation, to the time when the bills drawn upon him for the equivalent may become due. Such an operation, however, would be more advantageous, if the ſame paper were remitted to Liſbon for direct returns.

Execution of the Order at Hamburgh.

Upon the receipt of the order in queſtion, Hamburgh may draw upon London at 34 3, and take bills upon Liſbon at $40\frac{3}{4}$. It remains, therefore, to be aſcertained, whether the combination of theſe prices will admit of the execution of the order within the limits preſcribed, including in the calculation $\frac{3}{4}$ per cent for the charges. For this purpoſe, as the merchant at Hamburgh has to calculate the proportional exchange between London and Liſbon, he ranges the certain price of the exchange between thoſe two places as the firſt term in the dividend.

EQUATION.

1000 reis = x
400 reis = $40\frac{3}{4}$ grotes
12 grotes = 1 ſhilling Flemiſh
$34\frac{1}{4}$ ſhill. Flem. = 240 pence ſterling
100 with charges = $100\frac{3}{4}$.

OPERATION BY LOGARITHMS.

Fixed number 50 = 169897
Hamburgh on Liſbon $40\frac{3}{4}$ + 161013
Difference of $\frac{3}{4}$ above 100 + 325

331235
Hamburgh on London $34\frac{1}{4}$ — 153466

177769 = $59\frac{15}{16}$ reſult.

The reſult of this operation, which is $59\frac{15}{16}$, demonſtrates that the order may be executed, ſince Hamburgh purchaſes paper upon Liſbon at $40\frac{3}{4}$, takes its reimburſement upon London at 34 3, and, including

¾ per cent charges, eſtabliſhes a practical exchange from London upon Liſbon, at $59\frac{15}{16}$, being within the limits preſcribed.

I have now to explain why I have ranged the charges in the column of the dividend.

In fact, as the merchant at Hamburgh has purchaſed paper upon Liſbon, and therefore remitted to London 400 reis for 40¾ grotes which he diſburſes, it follows that he muſt draw upon London for the value of 40¾ grotes, with addition of ¾ per cent for his charges; therefore 100 with addition of the charges, that is, 100¾, muſt be placed in the ſame column as 40¾.

This kind of Banking Orders is the moſt frequently uſed in buſineſs, as it does not require any calculation on the part of the perſon who tranſmits it, and as the chances incurred are of little conſequence, and eaſily foreſeen, while the realization of the orders very generally leaves an actual profit.

SECOND EXAMPLE.

Compound Banking Order.

I have before me the quotation of exchanges at London, and that which I have received from Hamburgh; they are as follow:

	Quotation at London.		Quotation from Hamburgh.	
Hamburgh direct	35	6	London direct	34
Amſterdam . . .	37	6	. . . .	35
Genoa	46		. . . .	78¼
Leghorn	50½		. . . .	85
Liſbon	61		. . . .	41⅛
Madrid	35		. . . .	81½
Paris	25	15	. . . .	24⅛

Seeing that I can procure, at London, paper upon Hamburgh at 35 6, and, by remitting it thither, obtain returns at 34, I calculate what the profit per cent may be reſulting from that operation; ſtating the following proportion:

$$35\tfrac{1}{2} : 34 :: £100 : x.$$

It is evident that this proportion ſhould be thus ſtated, ſince I diſburſe 1 pound ſterling to purchaſe 35 ſhillings 6 grotes Flemiſh banco, and that I ſhall alſo receive in return 1 pound ſterling as the price of 34 ſhillings Flemiſh. As the reſult muſt be leſs than 100, I muſt therefore place 35½ as the firſt term.

Performing the calculation, I find the reſult to be £95 15 6, which ſhews that the difference between £100 and £95 15 6, being £4 4 6, will be in my favour.

But, as I have already obſerved, I have to conſider in this operation the banking charges, and the intereſt upon the funds which I ſhall employ, from the time of the payment of the remittances to be made, to the receipt of the amount of thoſe which will be ſent to me in return.

The banking charges at Hamburgh will be ½ per cent commiſſion, and $\frac{1}{10}$ per cent brokerage, to which muſt be added the brokerage at London, and the expence of poſtages at both places. I ſhall conſider the whole as ¾ per cent, or 15 ſhillings. But, before I proceed, I may obſerve, that my correſpondent at Hamburgh would have a right to charge me ½ per cent commiſſion for receiving the amount of my remittances, and ½ per cent more for the riſk which he incurs by indorſing his remittances to myſelf; but, in conſequence of the competition among the merchants in the principal places of buſineſs, the whole commiſſion upon ſuch an operation is reduced to ½ per cent.

In reſpect to the intereſt upon the ſum which I diſburſe, I ſhall ſuppoſe that the bills which I take, and thoſe which I ſhall receive, will be each at two uſances. To the two uſances, or 60 days, which are the term for the payment of the bills which I purchaſe, I add the 12 days grace allowed at Hamburgh, and deduct from the ſum the 3 days which I am allowed in London by the cuſtom of deferring ſimilar payments to the poſt-day following that of the actual transfer of the bills. I perceive, therefore, that there will be an intereſt current for 69 days, till the day when my correſpondent at Hamburgh will be in poſſeſſion of the amount of the remittance. And, as the returns are to be made under diſcount, for the purpoſe of inſuring the ſucceſs of the operation as much as poſſible, and will be at 60 days date, I add to this number the 3 days of grace allowed at London, making 63, and, adding the latter to 69, it is evident that I ſhould compute the intereſt upon my funds for the ſpace of 132 days.

To this end, I ſtate the following proportion,

7300 : 132 :: £100 : x,

which is reduced to dividing 132 by 73; and the quotient denotes that the rate of ſuch intereſt is £1 16 2 per cent.

Proceeding to conſider how the operation in general may affect the difference between £100 and £95 15 6, being £4 4 6

I find that I have to deduct for

Banking charges . . .	£0 15 0	
Intereſt	1 16 2	
		2 11 2
		£1 13 4

and, in conſequence of this reſult, which promiſes a clear profit of £1 13 4 per cent, I do not heſitate to purchaſe the bills in queſtion upon Hamburgh. But, before I remit them thither to order direct returns, it occurs to me to endeavour to diſcover whether it would not be more advantageous to me to receive indirect returns at prices which I may fix, and at which I may ſuppoſe that the order for ſuch remittance might be executed.

With this view, and in order to find the proportional exchanges between Hamburgh and London, through the other places, I collate the two quotations above mentioned, placing uniformly 1 pound ſterling, or the certain price of exchange between London and Hamburgh, as the firſt term in the dividend of the ſeveral equations; the whole as follows:

Through Amſterdam.

1 pound ſterling = 34 3½
1 pound ſterling = 37½ ſhillings Flemiſh
10 ſhillings Flemiſh = 3 florins
1 florin = 20 ſtivers
35 ſtivers banco = 2 marcs banco
3 marcs = 8 ſhillings Flemiſh.

Genoa.

1 pound ſterling = 34
1 pound ſterling = 240 pence ditto
46 pence = 1 pezza fuori di banco
1 pezza = 78¼ grotes
12 grotes = 1 ſhilling Flemiſh.

Leghorn.

1 pound ſterling = 33 8
1 pound ſterling = 240 pence ditto
50½ pence = 1 pezza of 8 reals
1 pezza = 85 grotes
12 grotes = 1 ſhilling Flemiſh.

Liſbon.

1 pound ſterling = 33 8½
1 pound ſterling = 240 pence ditto
61 pence = 1000 reis
400 reis = 41⅛ grotes
12 grotes = 1 ſhilling Flemiſh.

Madrid.

1 pound ſterling = 33 9⅓
1 pound ſterling = 240 pence ditto
35 pence = 1 dollar of exchange
375 dollars of exch. = 272 ducats ditto
1 ducat ditto = 81½ grotes
12 grotes = 1 ſhilling Flemiſh.

Paris.

1 pound ſterling = 34 1
1 pound ſterling = 25¾ livres tournois
81 livres tournois = 80 francs
3 francs = 24⅛ ſhillings banco
16 ſhillings banco = 1 marc banco
3 marcs = 8 ſhillings Flemiſh.

Upon examination of the reſults of theſe ſeveral calculations, I perceive that indirect returns upon Leghorn, Liſbon, or Madrid, would be the moſt advantageous to me, ſince I ſhould diſburſe a ſmaller ſum of ſhillings Flemiſh banco, to receive a pound ſterling, than if I were to cauſe a direct remittance to be purchaſed at 34. In remitting, therefore, to Hamburgh the bills which I have taken upon that place, I direct my correſpondent to make me the returns of the value in other bills, either upon Leghorn at 85, upon Liſbon at 41⅛, or upon Madrid at 81½, authorizing him, at the ſame time, in caſe the exchanges ſhould have varied, to make uſe of that place which may be found, by a new combination, to preſent the greateſt profit, or the leaſt loſs. Such returns, independently of the advantage which they offer beyond the direct courſe, afford that alſo of putting me the ſooner in poſſeſſion of my funds, by the immediate negotiation which I ſhall effect at London of the indirect bills to be remitted to me.

N. B. The execution of this order will be ſeen hereafter, as the fourth queſtion in Compound Banking Orders.

The two examples above mentioned will, I truſt, be found ſufficient to give an accurate idea of the nature of ſimilar orders, and of the degree of preciſion which is required in their calculation. Let us now proceed to their ſolution.

OF THE RECEIPT AND EXECUTION OF BANKING ORDERS.

We have ſeen that merchants who ſpeculate in exchanges give orders to their correſpondents for drafts, or for remittances, pointing out to them the rates of exchange by which they are to be guided. It is not always, however, that thoſe who receive the orders are enabled to execute them according to their ſtrict import; and as variations often occur in the courſes, advantageous, perhaps, in part, to the principal, and in part diſadvantageous, it can only be determined by calculation whether the orders received may be executed within the limits preſcribed. It is this ſpecies of calculation which I ſhall develope in the two following inſtances.

CALCULATION OF SIMPLE BANKING ORDERS,

BY THE RULE OF FRACTION.

In a ſimple banking order, there is neceſſarily but one exchange of the ſame kind as the unknown exchange, which is repreſented by x. We place x in equation with this exchange, taken as the numerator of the firſt fraction. If x, or the reſult of the operation, ought to be greater than the ſame exchange, it will happen that the greateſt of the two other exchanges, which are always of the ſame kind in reſpect to each other, will be the numerator of the ſecond fraction, while the ſmalleſt exchange will be the denominator. In fact, it is obvious that the leſs the denominator may be, the greater will be the quotient; and the greater the denominator, the leſs the quotient.

The ſolution of the following queſtions will illuſtrate what may not be immediately underſtood by this rule.

N. B. The principle of the *Rule of Fraction* is developed at greater length in *Commercial Arithmetic*, introductory to theſe Elements.

SIMPLE BANKING ORDERS.

FIRST QUESTION.

London receives an order from Liſbon to draw upon Madrid at 35, and to make direct returns of the amount to Liſbon at 62: upon the receipt of this order, London cannot draw upon Madrid but at 34½, and it is required to know at what rate London ſhould remit to Liſbon to counterbalance the loſs upon the draft.

SOLUTION.

Every place which gives the uncertain price ſhould remit at the loweſt exchange: thus, as London gives the uncertain price to Liſbon, it ſhould remit thither at a lower exchange than 62, to counterbalance the loſs upon Madrid. Therefore,

$$x = \frac{62 \times 34\frac{1}{2}}{35}.$$

As the exchange repreſented by x ought to be leſs than the limit preſcribed for the returns, we muſt neceſſarily place the greateſt of the two other exchanges as a denominator; whence x will be as much leſs than 62, as 34½ is leſs than 35.

BY LOGARITHMS.

$$\begin{array}{rl} 62 \; = & 179239 \\ 34\frac{1}{2} \; + & 153782 \\ \hline & 333021 \\ 35 \; - & 154407 \\ \hline & 178614 = 61\frac{1}{8} \text{ reſult.} \end{array}$$

SIMPLE BANKING ORDERS.

SECOND QUESTION.

London receives an order from Hamburgh to draw upon Oporto at 61½, and to make direct returns to Hamburgh at 35 3: upon the receipt of this order, London cannot remit to Hamburgh but at 34 9; and it is required to know at what rate London ſhould draw upon Oporto to counterbalance the loſs that will be incurred by the remittance.

SOLUTION.

Every place which gives the uncertain price ſhould draw at the higheſt exchange. Thus, as London gives the uncertain price to Oporto, its draft upon the latter ſhould be at a higher exchange than 61½, to compenſate the loſs upon the remittance. Therefore,

$$x = \frac{61\tfrac{1}{2} \times 35\ 3}{34\ 9};$$

whence it is ſeen, that x muſt exceed 61½ in the ſame proportion that 35 3 exceeds 34 9: by which means the limits preſcribed are preſerved, ſince the loſs incurred upon the remittance will be compenſated by the profit acquired upon the draft.

BY LOGARITHMS.

$$\begin{array}{lr} 61\tfrac{1}{2} & = 178888 \\ 35\ 3 & +\ 154716 \\ \hline & 333604 \\ 34\ 9 & -\ 154095 \\ \hline & 179509 = 62\tfrac{3}{8} \text{ reſult.} \end{array}$$

SIMPLE BANKING ORDERS.

THIRD QUESTION.

Paris gives an order to London to remit thither at 25 5, and to effect its reimburſement upon Amſterdam at 37 9: upon the receipt of this order, London cannot draw upon Amſterdam but at 38 3; and it is required to know at what rate London ſhould remit to Paris, to compenſate the loſs which will be incurred upon the draft.

SOLUTION.

Every place which gives the certain price ſhould remit at the higheſt exchange: thus, as London gives the certain price to Paris, it ſhould remit at a higher exchange than 25 5. Therefore,

$$x = \frac{25\ 5 \times 38\ 3}{37\ 9};$$

whence it is ſeen, that x muſt exceed 25 5 as much as 38 3 exceeds 37 9. There is not, therefore, any departure, upon the whole, from the limits preſcribed, ſince the profit upon the remittance will compenſate the loſs upon the draft.

BY LOGARITHMS.

$$\begin{array}{rr} 25\ 5 = & 140226 \\ 38\ 3 + & 158263 \\ \hline & 298489 \\ 37\ 9 - & 157692 \\ \hline & 140797 = 25\ 11\tfrac{2}{3}\ \text{reſult.} \end{array}$$

SIMPLE BANKING ORDERS.

FOURTH QUESTION.

A merchant at Paris orders London to remit to him upon Leghorn at 50, and to effect its reimburſement upon Hamburgh at 34 6: upon the receipt of this order, London cannot remit upon Leghorn but at $50\frac{3}{8}$; and it is required to know at what rate London ſhould draw upon Hamburgh, to compenſate the loſs by the remittance.

SOLUTION.

Every place which gives the certain price ſhould draw at the loweſt exchange: thus, as London gives the certain price to Hamburgh, its draft upon that place ſhould be at a lower exchange than 34 6. Therefore,

$$x = \frac{34\ 6 \times 50}{50\frac{3}{8}}.$$

It is obvious, that as x is as much lower than 34 6 as 50 is lower than $50\frac{3}{8}$, London will draw at a profit which will compenſate the loſs upon the remittance, and adjuſt the execution of the order to the proportions preſcribed.

BY LOGARITHMS.

34 6 = 153782
50 + 169897
———
323679
$50\frac{3}{8}$ — 170222
———
153457 = 34 3 reſult.

CALCULATION OF COMPOUND BANKING ORDERS.

RULE.

Make as many fractions as there may be places mentioned in the order, by taking the loweſt exchange of the ſeveral places, each as the numerator of a fraction, and the higheſt as the denominator of the ſame fraction. The order may be always advantageouſly executed when the profit ſhall be repreſented by the ſmalleſt fraction, but it will be otherwiſe when the ſame fraction ſhall repreſent the loſs. If it ſhould not be obvious which may be the greateſt and which the ſmalleſt of the given fractions, they may be reduced to a common denominator, or into decimals, by adding three ciphers to the numerator of each fraction, and dividing it by its denominator.

A fraction is greater or leſs in proportion as its numerator is more or leſs approximate to its denominator, which is invariably equivalent with unity.

The greater a fraction may be, the leſs will be the difference between its terms, and the leſs will be the profit or loſs.

The leſs a fraction may be, the greater will be the difference between its terms, and, conſequently, the greater will be the profit or loſs.

COMPOUND BANKING ORDERS.

FIRST QUESTION.

A merchant at Paris orders London to draw upon Hamburgh at 35, and to remit to him at 25: upon the receipt of the order, the reſpective equivalents of a pound ſterling at London are 36 ſhillings Flemiſh banco and 26 livres tournois. Required whether London may execute the order with advantage.

SOLUTION.

The fraction for Hamburgh $= \frac{35}{36}$;

That for Paris . . . . . . $= \frac{25}{26}$.

The exchange upon Hamburgh has become comparatively unfavourable for drawing, but that upon Paris has improved for remitting. The fraction repreſenting the profit being leſs than that repreſenting the loſs, it is evident that the operation is feaſible.

COMPOUND BANKING ORDERS.

SECOND QUESTION.

A merchant at Amſterdam orders London to draw upon Madrid at $34\frac{3}{8}$, and to remit to him the amount upon Liſbon at $61\frac{3}{4}$: upon the receipt of the order, the exchange upon Madrid is at 35, and upon Liſbon at $62\frac{1}{8}$. Required whether London may execute the order with advantage.

SOLUTION.

$$\text{The fraction for Madrid} = \frac{34\frac{3}{8}}{35} \text{ or } \frac{275}{280},$$

$$\text{That for Liſbon} \;.\;.\;.\;.\; = \frac{61\frac{3}{4}}{62\frac{1}{8}} \text{ or } \frac{494}{497}.$$

The exchange upon Madrid has improved for drawing, and that upon Liſbon has become unfavourable for remitting. The fraction repreſenting the profit being leſs than that repreſenting the loſs, it is evident that the order may be executed.

COMPOUND BANKING ORDERS.

THIRD QUESTION.

A merchant at Amſterdam orders London to draw upon Liſbon at $61\frac{3}{4}$, and to remit to him the equivalent upon Madrid at $34\frac{3}{8}$. When the order is received, the exchange upon Liſbon is at $62\frac{1}{8}$, and upon Madrid at 35. Required whether London may execute the order with advantage.

SOLUTION.

$$\text{The fraction for Liſbon} = \frac{61\frac{3}{4}}{62\frac{1}{8}} \text{ or } \frac{494}{497};$$

$$\text{That for Madrid} \ldots = \frac{34\frac{3}{8}}{35} \text{ or } \frac{275}{280}.$$

The exchange upon Liſbon has improved for drawing, and that upon Madrid has become unfavourable for remitting. Therefore, as the fraction repreſenting the loſs is leſs than its correlative repreſenting the profit, the operation is not feaſible.

COMPOUND BANKING ORDERS.

FOURTH QUESTION.

Hamburgh receives an order from a merchant at London to remit to him bills upon either of the under mentioned places which may preſent the moſt profit or the leaſt loſs, in caſe the exchanges ſhould have varied. The limits are as follow: upon Leghorn 85; upon Liſbon $41\frac{1}{8}$; and upon Madrid $81\frac{1}{2}$; but, upon the receipt of the order, the exchange upon Leghorn is $85\frac{1}{4}$, upon Liſbon $40\frac{7}{8}$, and upon Madrid $81\frac{1}{8}$. Upon which place ſhould Hamburgh remit?

SOLUTION.

The fraction for Leghorn $= \dfrac{85}{85\frac{1}{4}}$ or $\dfrac{340}{341}$;

That for Liſbon . . . . $= \dfrac{40\frac{7}{8}}{41\frac{1}{8}}$ or $\dfrac{327}{329}$;

And that for Madrid . $= \dfrac{81\frac{1}{8}}{81\frac{1}{2}}$ or $\dfrac{649}{652}$.

Leghorn has become diſadvantageous for remitting, but Liſbon and Madrid have improved. The fraction for Liſbon being leſs than that for Madrid, will afford the greateſt profit, and the remittance to London ſhould be, therefore, upon Liſbon, at $40\frac{7}{8}$.

COMPOUND BANKING ORDERS.

FIFTH QUESTION.

A merchant at London orders Paris to remit to him upon either of the under mentioned places, chuſing that which will afford the greateſt profit or leave the leaſt loſs, in caſe the exchanges ſhould have varied. The limits given are the following: on Hamburgh 189 10; on Genoa 94$\frac{2}{3}$; and on Leghorn 101$\frac{3}{4}$: upon the receipt of the order, the exchange on Hamburgh is at 188 15; on Genoa 94$\frac{1}{2}$; and on Leghorn 101$\frac{1}{4}$. Required upon which place ſhould Paris remit?

SOLUTION.

$$\text{The fraction for Hamburgh} = \frac{188\frac{3}{4}}{189\frac{1}{2}} \text{ or } \frac{755}{758} = 0{,}996;$$

$$\text{That for Genoa} \ldots\ldots = \frac{94\frac{1}{2}}{94\frac{2}{3}} \text{ or } \frac{567}{568} = 0{,}998;$$

$$\text{And that for Leghorn} \;\ldots = \frac{101\frac{1}{4}}{101\frac{3}{4}} \text{ or } \frac{405}{407} = 0{,}995.$$

As each of the three rates has become advantageous, the election will devolve upon the ſmalleſt fraction, as denoting the greateſt profit. The remittance from Paris to London muſt be, therefore, upon Leghorn, at 101$\frac{1}{4}$.

COMPOUND BANKING ORDERS.

SIXTH QUESTION.

London orders Paris to remit upon either of the under mentioned places, chuſing that which will afford the greateſt profit, or leave the leaſt loſs, in caſe the exchanges ſhould have varied. The limits given are the following: on Hamburgh 188 15; on Genoa $94\frac{1}{2}$; and on Leghorn $101\frac{1}{4}$: upon receipt of the order, the exchange upon Hamburgh is 189 10; upon Genoa $94\frac{2}{3}$; and upon Leghorn $101\frac{3}{4}$. Upon which place ſhould Paris remit?

SOLUTION.

The fraction for Hamburgh $= \dfrac{188\frac{3}{4}}{189\frac{1}{2}}$ or $\dfrac{755}{758} = 0{,}996$;

That for Genoa . . . . $= \dfrac{94\frac{1}{2}}{94\frac{2}{3}}$ or $\dfrac{567}{568} = 0{,}998$;

And that for Leghorn . . . $= \dfrac{101\frac{1}{4}}{101\frac{3}{4}}$ or $\dfrac{405}{407} = 0{,}995$.

As each of the three rates has become diſadvantageous, it is evident that the choice ſhould fall upon the greateſt fraction, as leaving the leaſt proportion of loſs. The remittance from Paris to London ſhould be, therefore, upon Genoa, at $94\frac{2}{3}$.

OF

EXCHANGE

CIRCULATIONS.

OF

EXCHANGE CIRCULATIONS.

IT is well known, that, by the ſame reaſon that Public credit, which is no other than the credit of Government, upholds the Fabric of National Finance, the merchant is enabled, by the credit given to him individually, to extend his operations, as it were, indefinitely. Hence it is that a merchant of reſpectability can at pleaſure obtain payment of the amount of any bills which he may chuſe to draw upon foreign places; or, if he ſhould direct his attention to the combinations which any of ſuch places may afford, he may originate a ſeries of thoſe ſpeculative operations which I am about to conſider.

Exchange Circulations may, therefore, be truly ſaid to be banking operations, performed entirely by means of credit.

They may be diſtinguiſhed under two heads:

1ſt, Operations, by which the poſſeſſors of limited capital are enabled to undertake and ſuſtain concerns of far greater magnitude, or by which a competency to future reſponſibility is made ſubſervient to immediate or ultimate advantage.

2dly, Operations, to which governments and public eſtabliſhments have occaſional recourſe, either to fulfil ſubſidiary treaties, or to procure the importation of bullion and ſpecie, or to effect a riſe or fall in exchanges.

The operations in queſtion are alſo frequently undertaken by perſons who, to elicit a momentary reſource, incur a reſponſibility to which they are not competent. It is in conſequence of this practice that an unfavourable idea is in general aſſociated with the word *circulation;* ſince it is obvious that a perſon in circumſtances of embarraſſment profits by his remaining credit, merely to delay, by ſuch means, the event of his failure, at the ſame time that it may be rendered fatal to the correſpondents who may have ſupported the illuſive circulation. It may be farther obſerved, that, by the progreſs of the loſs of credit, the operations will be reſtricted to a few places, and, as the terms of their execution muſt be alſo circumſcribed, their reſults may be preſumed to be in general unprofitable. Diſpenſing, therefore, with any farther conſideration of this practice of exchange circulations, which cannot be too much reprehended, I ſhall proceed to ſpeak of the two ſorts above mentioned.

The object of the former is, that of facilitating extenſive enterprize, and of ſuſtaining ſpeculations, the realization of which is more or leſs remote. The baſis of this ſort of circulations is the poſſeſſion, or the competency to poſſeſs, indubitable means of liquidating the drafts which are the conſequence of the ſpeculation, but it is to be obſerved, that the banking operations, which are the medium, are matters of great nicety. In fact, it is eſſential, not only that the ſpeculator ſhould not commit his credit by equivocal undertakings, but alſo that they ſhould be combined ſo as not to abſorb, by their conſequences, the profit expected from the ſpeculation which they were intended to facilitate.

It is therefore fundamentally neceſſary to be well verſed in the knowledge of arbitrations of exchange; to poſſeſs an eſtabliſhed credit with thoſe who may be the agents of the circulation abroad; and to calculate the term when the circulation may have been accompliſhed, in order, if neceſſary, to extend, or to renew it. Great care ſhould alſo be taken to reimburſe with exactneſs, and plauſibility of appearance, the merchants employed abroad; eſpecially avoiding to propoſe any operations which may appear to them to be prejudicial to the ſpeculator, ſince a diſcovery of that nature would engender concluſions unfavourable to his credit.

Let us now endeavour to apply the practical part of theſe principles to the following operations.

FIRST CIRCULATION.

A merchant at London deducing, from various circumſtances, that a conſiderable advance may be expected in the price of cotton, ſends orders to Liſbon for purchaſes of that article, and opens a credit upon Paris for the amount in favour of his correſpondent at Liſbon. As, however, it is ſuppoſed that the advance upon the price of cotton will not be immediate, but progreſſive, it is requiſite that the ſale be delayed until the prices be ſuch as the ſpeculator contemplated. Having, in the mean while, to furniſh Paris with funds for the drafts from Liſbon at 100 days date, he diſcovers, by the combination of ſeveral quotations of exchange, that it would be advantageous to give orders to Hamburgh to remit to Paris, and to re-draw upon Madrid at 3 months date. In fact, Hamburgh draws upon Madrid, and, as the latter re-draws upon London at uſance and a half, it is evident that the merchant at London has obtained, by this circulation, the uſe of funds during the ſpace of at leaſt eight months; while he might procure, by ſimilar means, the uſe of other funds, if he had not yet ſold his cotton.

SECOND CIRCULATION.

A merchant at London being deſirous of procuring the uſe of a ſum of money for twelve months, draws upon Liſbon at 90 days date, ordering Liſbon to effect its reimburſement upon Leghorn at 3 months; Leghorn to draw upon Hamburgh in ſucceſſion, alſo, at 3 months; and, at length, Hamburgh to take its reimburſement upon London, at 3 uſances. London draws at 60½; Liſbon at 830; Leghorn at 86¾; and Hamburgh at 34 10. Required the proportional exchange between London and Liſbon, reſulting from the ſeveral rates given.

EQUATION.

1000 reis = 60 pence reſult
830 reis = 1 pezza
1 pezza = 86¾ grotes
12 grotes = 1 ſhilling Flemiſh
34⅚ ſhill. Flemiſh = 240 pence ſterling.

Hence it appears that the milreis, for which London has received 60½ pence by drawing upon Liſbon, are repaid, 12 months afterwards, at the rate of 60: independently, therefore, of the profit by the exchange, there would ſtill be an advantage upon the intereſt of the amount, after deducting the banking charges, which may be eſtimated at ¾ per cent in each place, or 2¼ per cent upon the whole.

In this circulation there is neceſſarily a greater degree of contingency than in the former, and the conſequences might be otherwiſe dangerous, by reaſon of eventual variations in the exchanges, in the interval between the tranſmiſſion of the orders and their execution.

Let us now conſider the ſecond kind of circulations.

Governments, and public eſtabliſhments, are ſometimes induced by political events, by circumſtances of difficulty, or other ſpecial conſiderations, to have recourſe to exchange circulations. In particular, we have witneſſed, in the courſe of laſt year, a circulation, inſtituted to facilitate to Spain the means of fulfilling a treaty of ſubſidy to be paid to France.

In the year 1804, which was ſo fatal to Spain by epidemical ravage and famine, her commerce was paralized, and her exchanges with foreign countries depreciated. The ſubſidy claimed of the government was immenſe, comparatively with its effective reſources, and to accompliſh the payment of it there were only three direct methods, either to ſend dollars to Paris by land, or to remit thither bills of exchange, or to enable Paris to draw upon Spain.

The former of theſe means was at firſt carried into effect; but it was found to be ſlow and expenſive. The two others tended to depreciate ſtill farther the exchange upon Spain; and, indeed, the Spaniſh government, which had not then received the ſupplies expected from its colonies, was unprovided with ſufficient capital to make good the neceſſary payments.

On the other hand, the conditions of the treaty were abſolute, and the wants of France were urgent. It was therefore indiſpenſible that expedients ſhould be deviſed to enable Spain to ſatisfy the demands of France, and to await the arrival of her own treaſures. The expedient which was in fact adopted, was that of eſtabliſhing an exchange circulation; and it is to be obſerved that it was eſſential that it ſhould be conducted with addreſs, in order that its conſequences might not occaſion the depreciation of the exchange of the country which ſought facility from the meaſure. An eminent merchant at Paris was inveſted with the management of this operation, which he adjuſted as follows. Hamburgh, Amſterdam, Paris, London, Madrid, and Cadiz, were to be the hinges upon which the circulation was to turn, and Leghorn, Genoa, and Liſbon, being of minor importance in exchange operations, were only conſidered as acceſſories. The firſt ſtep to be taken was, to obtain the conſent of one or of ſeveral merchants, in each of the places above mentioned, to become parties in the circulation, and to ſupport it by their capital, and by their credit. With this view, the reſources which Spain would poſſeſs, to enſure the payment of the drafts which would enſue from the circulation, were detailed by the ſaid merchant in his correſpondence; he alluded to the remittances in ſpecie which the Spaniſh government expected from its colonies; and, above all, he dwelt upon the confidence which was to be repoſed in the banking houſe of Madrid, in whoſe hands the government had already placed the effective reſources which it then poſſeſſed, and to whom it would transfer its future ſupplies.

The principle being thus eſtabliſhed, it only remained to regulate the extent of the operations from Paris, and from the other places, ſo as not to iſſue too much paper upon Spain, at the ſame time that the circulation might receive as much ſupport as poſſible from real buſineſs. With this view, London was choſen as a place upon which the circulation might be in part directed.

In fact, the price of dollars being then very high in London, this circumſtance was of itſelf ſufficient to eſtabliſh a proportional exchange with Spain of great advantage to the latter.

The firſt movement was commenced at Paris, where the negotiation of the drafts iſſued upon the ſeveral places above mentioned ſerved, in the firſt inſtance, to procure funds to effect the more urgent payments, at the ſame time that orders were tranſmitted to Hamburgh and Amſterdam to draw conſiderable ſums, chiefly upon London, Madrid, and Cadiz, and to inveſt the amount in remittances upon Paris.

In order that the circulation might proceed with regularity, an active correſpondence was eſtabliſhed between the merchants who conducted it. Credits were reſpectively opened by the houſe at Paris, and the orders which it iſſued were punctually confirmed by its colleagues at Madrid.

Diſpenſing, however, with the details of the operation in queſtion, which may be eaſily deduced from what has been ſaid, I ſhall ſtate an account of the reſult of the ſale of the firſt conſignment of dollars which were ſent from Cadiz to London, and which ſerved in part to liquidate the drafts which had been iſſued upon the latter. It will be perceived that not any thing could be more judicious than the proceedings adopted.

INVOICE FROM CADIZ.

Hard Dollars.	Reals of Vellon.
300000 equal to	6000000
Exportation duty, at 1323 reals 23 maravedis per 1000 hard dollars	397102 32
Brokerage ¼ per cent	15993 18
Petty charges	313 27
Premium of inſurance, at 2 per cent, and policy	127983 11
	6541393 20

CHARGES AT LONDON.

Freight, 1 per cent; carriage from Portſmouth, ¼; brokerage and commiſſion, ⅝; and petty charges, 31 ſhillings 6 pence upon the whole.

Hence the ſeveral charges, both at Cadiz and London, amount to 11 per cent, and as the dollars were ſold at 5 ſhillings 7 pence per ounce, and weighed 866¼ ounces per 1000 dollars, ſuch remittance eſtabliſhed a proportional exchange of $39\frac{9}{24}$, inſtead of the direct courſe of Cadiz upon London, which was at 36, and of that of London upon Cadiz, which was at 34⅝.

EXAMPLE.

1 dollar of exch. = $39\frac{9}{24}$ pence
85 doll. of exch. = 64 hard dollars
1000 hard dollars = 866¼ ounces
1 ounce = 67 pence
111 = 100 with charges.

It may be obſerved in general in reſpect to the drafts which were iſſued from the ſeveral places upon the continent, and to thoſe which were not liquidated in London by the remittance of dollars, that the payment was progreſſively effected in Spain, after the lapſe of the intermediate time employed in the circulation; ſo that the object was fully accompliſhed of raiſing immediate ſupplies upon the baſis of future competency.

I preſume that what has been ſaid will have ſufficiently ſhewn the importance of exchange circulations, and of the reſources which they afford when prudently directed by intelligent merchants.

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